GN-MD01

AirCruiser G Game Adapter

User's Manual

www.gigabyte.com.tw
July. 2005
Revision 1.0

GN-MD01 AirCruiser G Game Adapter

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Change direction or location of antenna.
- Increase the distance between the equipment and the antenna.
- Connect this equipment with a socket different from the one connected with antenna
- Ask help from experienced audio/video technicians.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be install and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Caution:

1. The device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
   (1) This device may not cause harmful interference, and
   (2) this device must accept any interference received, including interference that may cause undesired operation.

2. FCC RF Radiation Exposure Statement: The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

3. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

4. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

Contents

Chapter 1 Introduction 1
Overview 1
Features 1
Package Contents 2
GN-MD01 Rear Panel 2
Status LEDs 3
Side View 3
Chapter 2 QUICK INSTALLATION 4
System Requirements 4
Chapter 3 Configuration - Using A Web-Browser 12
Using Web-based Configuration 12
Configuring the Adapter for Access Point Mode Access 13
Configuring the Adapter for Ad-Hoc Mode Access 27
Configuring the Adapter for Ethernet Adapter Mode Access 38
Chapter 4 Troubleshooting 49
Appendix A: Glossary 50
Appendix B: Specifications 54
Physical Interface 54
Specifications 54
Appendix C: PC Configuration 55
TCP/IP Settings Under Windows 2000 55
TCP/IP Settings under Windows XP 58

Chapter 1 Introduction

Overview

Thank you for purchasing GIGABYTE's GN-MD01 AirCruiser G Game Adapter. It works as an Access Point as well as in Ad-Hoc / Ethernet Adapter mode based on the IEEE 802.11g standard providing speeds of 54Mbps bandwidth – 5 times faster than 802.11b! The GN-MD01 AirCruiser G Game Adapter supports both 802.11b and 802.11g clients.

The AirCruiser G Game Adapter lets you connect your Ethernet Ready game console to a wireless network for online gaming fun without the clutter of wires.

Furthermore, the Game Adapter supports up to 128-bit WEP encryption to safeguard your wireless network. The GN-MD01 is simple and easy to setup with a user-friendly Web-based configuration manager.

Features

- Complies with IEEE 802.11g and 802.11b standards
- Auto-link hardware button
- Data rates up to 54Mbps
- Supports 64-bit /128-bit WEP encryption, WPA, WPA-PSK, 802.1x
- Supports WDS
- Supports dynamic & static IP address configuration
- Three modes: Access Point, Ad-Hoc, and wireless Ethernet adapter
- Easy web-based management
- Web-based firmware upgrade
- Dynamically adjusts transmission rates for optimum performance

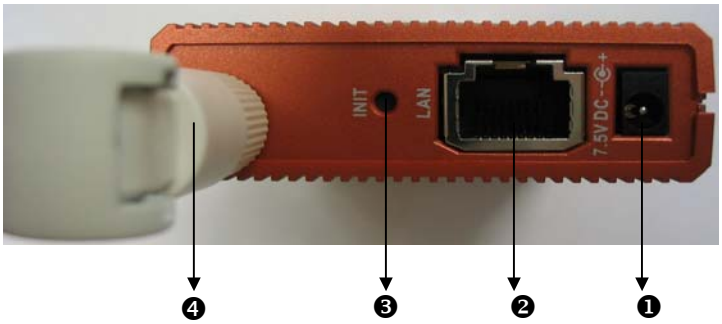
Package Contents

Before installing, please examine the components to ensure that none were damaged during shipping. The package contents of the GN-MD01 shall include:

- ☑ GN-MD01 AirCruiser G Game Adapter
- ☑ Power Adapter
- ☑ Installation CD containing User's Guide
- ☑ User's Guide
- ☑ Ethernet Cable

If there are any missing or damaged parts, please contact your local distributor or dealer immediately. If a replacement unit is needed, return the device with the original packing material, otherwise the warranty will be void.

GN-MD01 Rear Panel



The AirCruiser G Game Adapter's port is located on the rear panel and the antenna is located on the left side as shown from above.

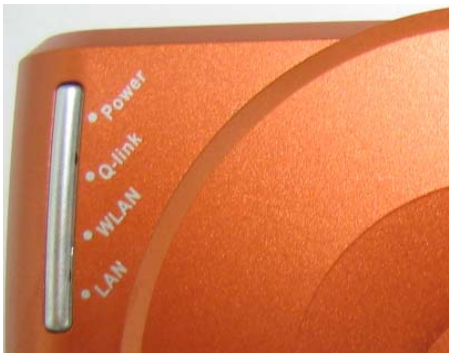
❶ **Power Socket**
Connect the power adapter to the power socket and power outlet

❷ **Ethernet LAN Port**
10/100Mbps LAN connection with auto-sensing and MDI/MDIX

❸ **Initialize Button**
With a pin or paperclip depress for 5 seconds to reset the unit to factory settings

❹ **Antenna**
Removable high gain 2.4GHz dipole-type

Status LEDs



LED's
Please see the table below for a description of the LEDs:

Label	Activity	Description
Power	On (Green)	Unit is receiving power and functioning
	Off	Unit is not receiving power
	On (Orange)	Unit is receiving power but not functioning
Q-Link	On (Green)	Q-link button is activated
	Blink	Devices are engaging in auto-link
	Blink OFF	Auto-linking is complete
	On (Red)	Auto-linking failed
WLAN	On (Green)	Wireless link is connected
	Blink	Data is being transmitted wirelessly
LAN	On (Green)	LAN port has detected a link with a 10/100 Mbps device
	Blink	Data is being transmitted

Side View

❶ **Q-Link Button**
If you have more than one AirCruiser G Game Adapter, you can press the Q-Link button to enable the AirCruiser G Game Adapters to link to each other automatically.

However, you can only use Q-Link function in the following situations:
1. All AirCruiser G Game Adapters are in Ad-Hoc mode
2. One device is in Access Point mode and the other devices are in Ethernet Adapter mode.

❷ **Mode Switch**
Set the device in either Access Point mode, Ad-Hoc mode or Ethernet Adapter mode.

Chapter 2 QUICK INSTALLATION

System Requirements

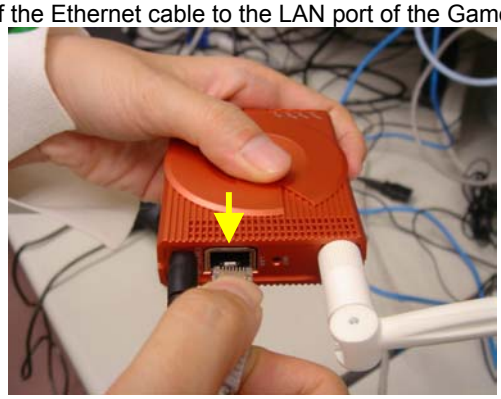
Suggested Specifications for Game Console installation:

- Ethernet patch cable
- An Ethernet Ready game console

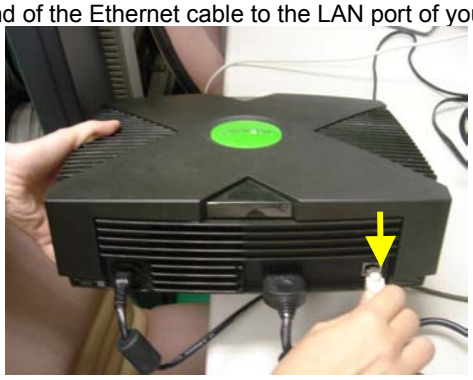
Connect to Game Console (XBOX)

Step1 Plug the power adapter cord into the router's power jack and then plug the power adapter into a power outlet.

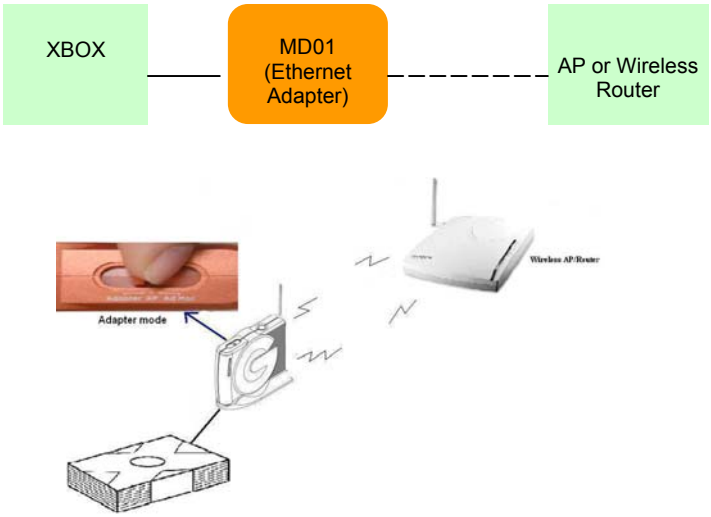
Step2 Connect one end of the Ethernet cable to the LAN port of the Game Adapter.



Step3 Connect the other end of the Ethernet cable to the LAN port of your Game Console (XBOX).



How to use XBOX Live with the Game Adapter?



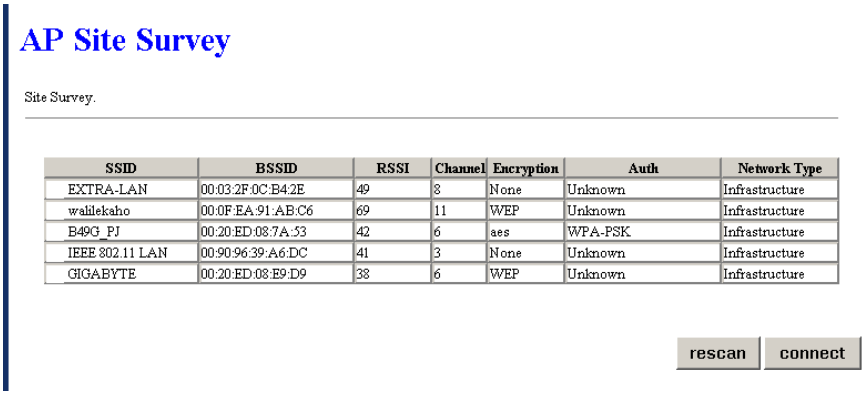
Step1 Set the GN-MD01 in Ethernet Adapter mode.

Step2 Using an Ethernet cable connect the GN-MD01 with your PC or Notebook.

Step3 Assign a static IP address to your computer. (Please refer to **Appendix C: PC Configuration**)

Step4 Open the web-browser of your choice, and enter the local IP address of the GN-MD01 AirCruiser G Game Adapter into the address line of browser. (The factory default local IP is **192.168.1.1**) and press **Enter**.

Step5 Choose one device you want to connect from the AP Site Survey form, and then click the "**connect**" button.



AP Site Survey

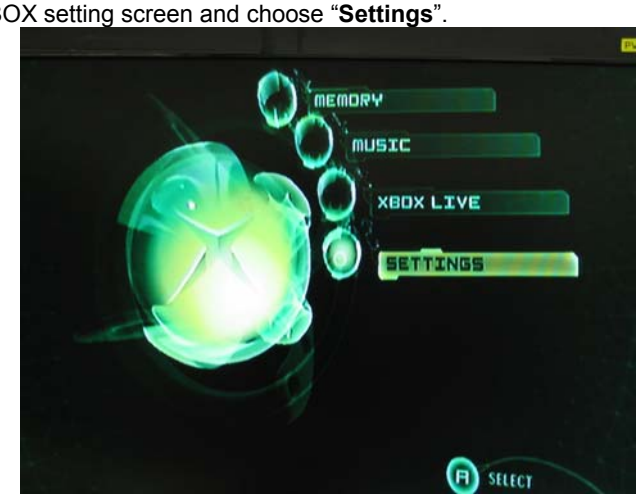
Site Survey.

SSID	BSSID	RSSI	Channel	Encryption	Auth	Network Type
EXTRA-LAN	00:03:2F:0C:B4:2E	49	8	None	Unknown	Infrastructure
walilekaho	00:0F:EA:91:AB:C6	69	11	WEP	Unknown	Infrastructure
B49G_PJ	00:20:ED:08:7A:53	42	6	aes	WPA-PSK	Infrastructure
IEEE 802.11 LAN	00:90:96:39:A6:DC	41	3	None	Unknown	Infrastructure
GIGABYTE	00:20:ED:08:E9:D9	38	6	WEP	Unknown	Infrastructure

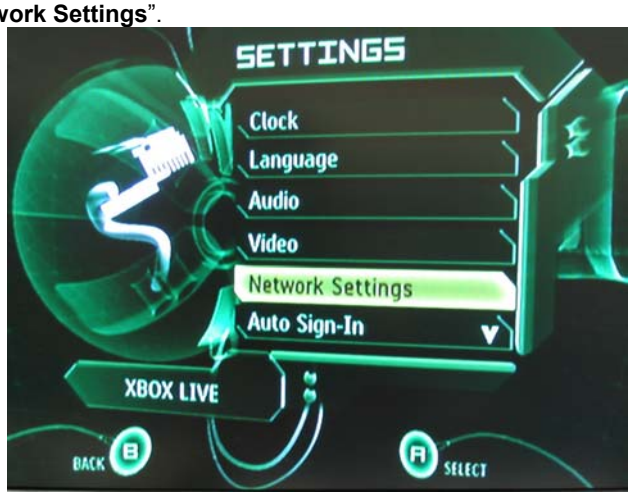
rescan connect

Step6. Pull out the end of the Ethernet cable from your computer and connect it to the LAN port of the XBOX.

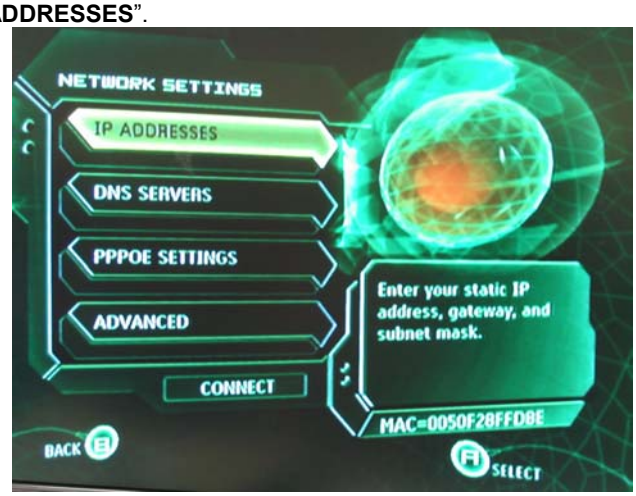
Step7. Open the XBOX setting screen and choose “**Settings**”.



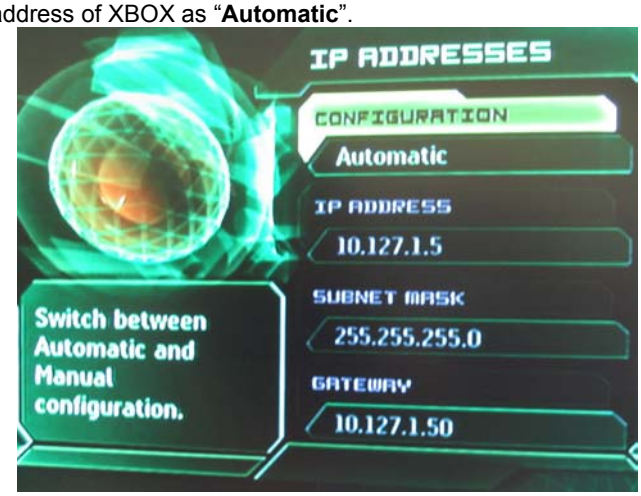
Step8. Choose “**Network Settings**”.



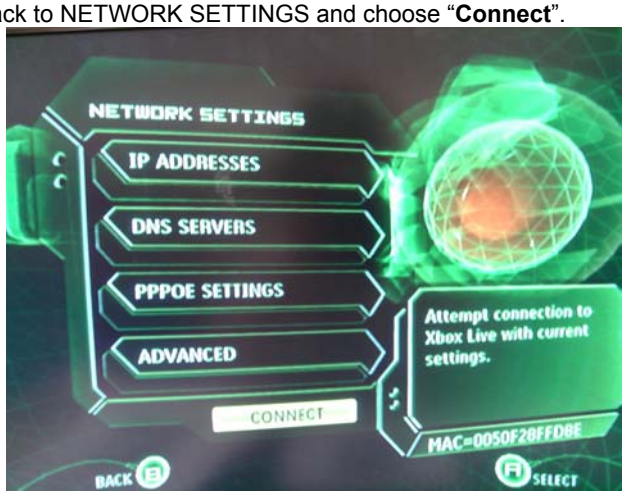
Step9. Choose “**IP ADDRESSES**”.



Step10. Set the IP address of XBOX as “**Automatic**”.



Step11. Please go back to NETWORK SETTINGS and choose “**Connect**”.

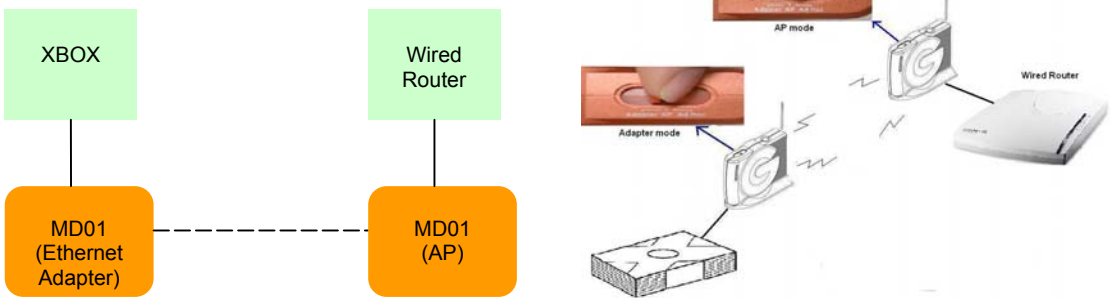


Step12. You can now start playing your Games. (Please refer to the Game Software installation guide for more detail information.)

⚠ **Note：** For XBOX, the game has to support “XBOX Live” when you want to play LAN games.

Case 2 Two GN-MD01 Game Adapters

Case2-1 One is in Ethernet Adapter mode, and the other one is in AP mode.



GN-MD01 AirCruiser G Game Adapter

Step1 Set the one of GN-MD01 in Ethernet Adapter mode, and the other one in AP mode.

Step2 Connect the GN-MD01 to the XBOX.

Step3 Connect the other GN-MD01 to your Router.

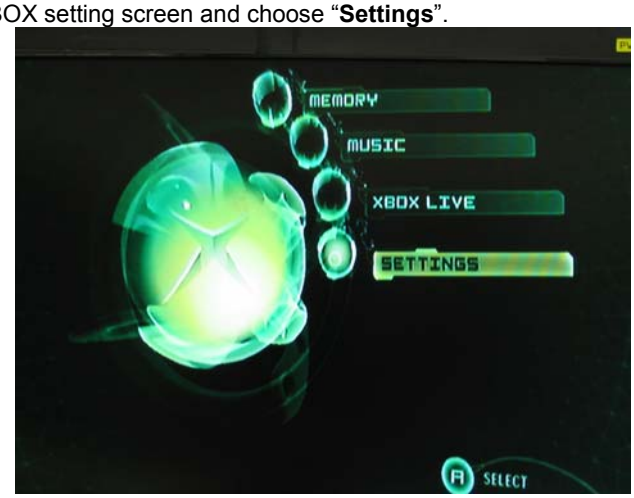
Step4 Press the Q-Link button on the one of GN-MD01 about 2 secs.

Step5 Now, the Q-Link LED will be blinking.

Step6 And then, please press the Q-Link button on the other GN-MD01 within 150 secs.

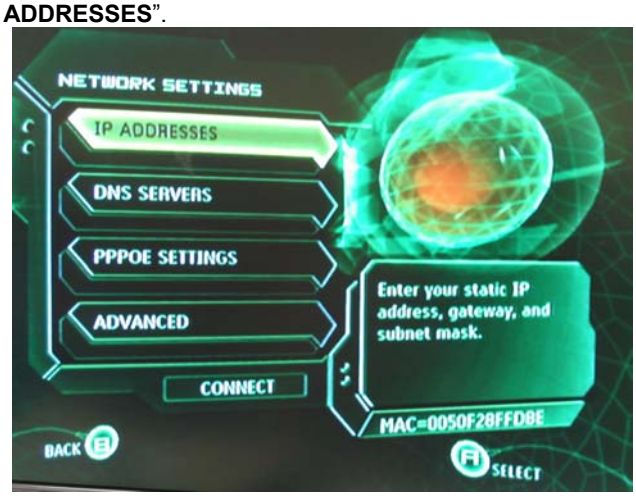
Step7 When the two Q-Link LEDs lights on for 5 second then off, this indicates that the GN-MD01s connected successfully. If the LED is red, indicates connection failed.

Step8 Open the XBOX setting screen and choose "**Settings**".

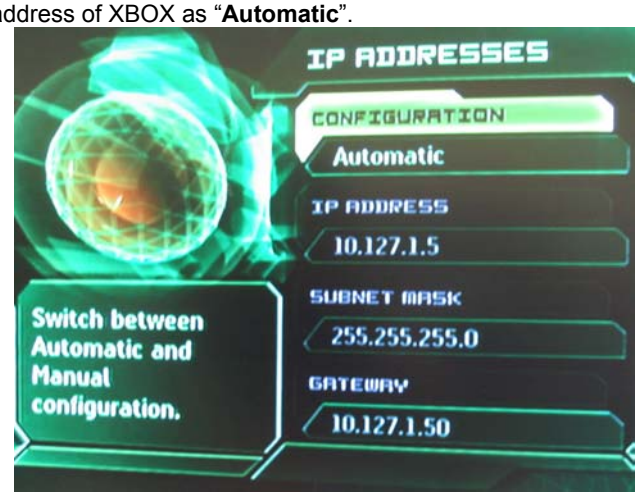


Step9 Choose "**Network Settings**".

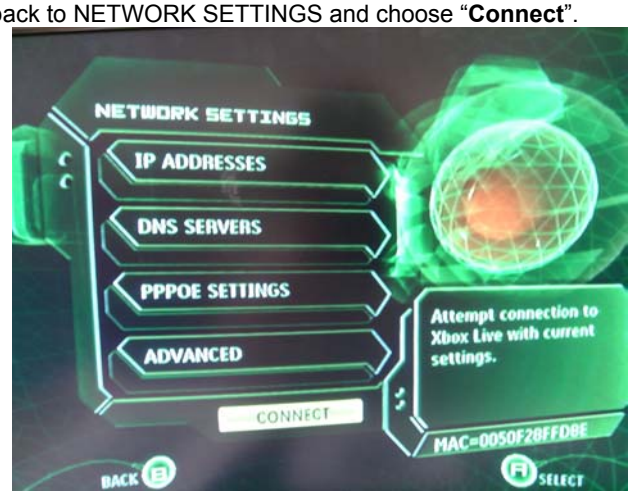
Step10 Choose “**IP ADDRESSES**”.



Step11 Set the IP address of XBOX as “**Automatic**”.



Step12 Please go back to NETWORK SETTINGS and choose “**Connect**”.



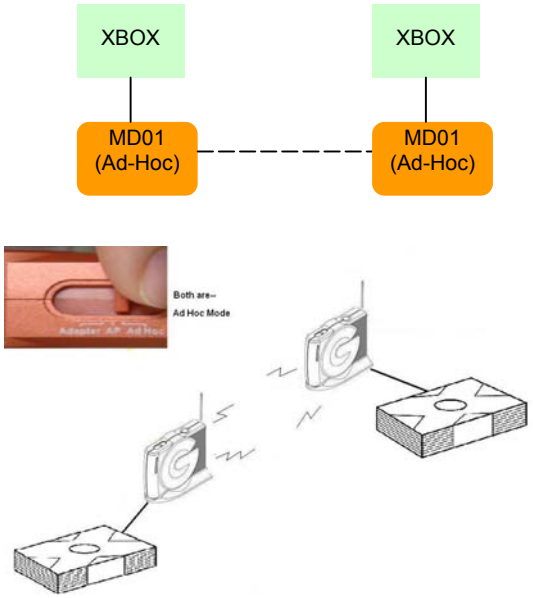
Step13 You can now start playing your Games. (Please refer to the Game Software installation guide for more detail information.)

⚠ **Note：** For XBOX, the Software has to support “XBOX Live” when you want to play LAN games.

Using Q-Link for your Game Console (XBOX System link-Head to Head)

Case1 Two GIGABYTE GN-MD01 Game Adapters

Ad-Hoc Mode to Ad-Hoc Mode



Step1 Set both game adapters in Ad-Hoc mode

Step2 Press the Q-Link button on the GN-MD01 about 2 sec.

Step3 Now, the Q-Link LED will be blinking.
Step4 And then, please press the Q-Link button on the other GN-MD01 within 150 sec.

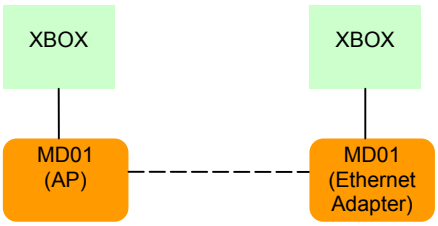
Step5 When the two Q-Link LEDs lights on for 5 second then off, this indicates that the GN-MD01s connected successfully. If the LED is red, indicates connection failed.

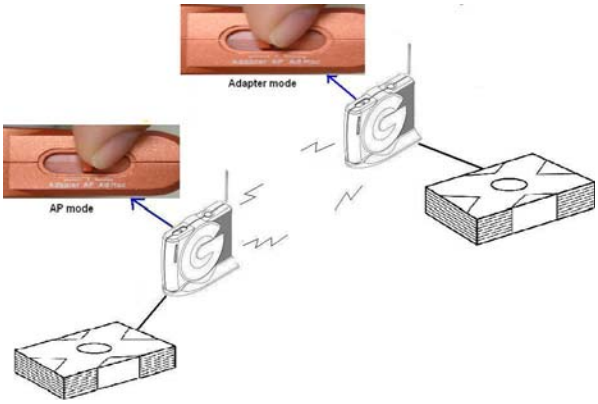
Step6 You can now start playing your Games. (Please refer to the Game Software installation guide for more detail information.)

⚠ **Note：** For XBOX, the game has to support “XBOX System Link” when you want to play LAN games.

Case2 Two GIGABYTE GN-MD01 Game Adapters

AP Mode to Adapter Mode





Step1 Set one game adapter in AP mode and the other one in Ethernet Adapter mode.

Step2 Press the Q-Link button on the GN-MD01 about 2 secs.

Step3 Now, the Q-Link LED will be blinking.

Step4 And then, please press the Q-Link button on the other GN-MD01 within 150 sec.

Step5 When the two Q-Link LEDs lights on for 5 second then off, this indicates that the GN-MD01s connected successfully. If the LED is red, indicates connection failed.

Step6 You can now start playing your Games. (Please refer to the Game Software installation guide for more detail information.)

⚠ **Note：** For XBOX, the Software has to support “XBOX System Link” when you want to play LAN games.

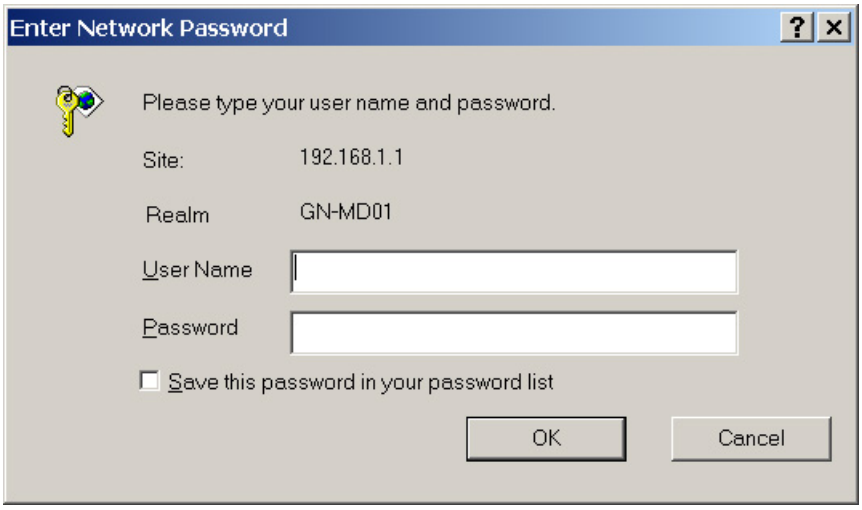
Chapter 3 Configuration - Using A Web-Browser

This section explains the web-based configuration method of setting up the Game Adapter. Any Internet Explorer 5.0 or above or Netscape Communicator 6.0 or above may be used to administer the GN-MD01 AirCruiser G Game Adapter.

Using Web-based Configuration

Open the web-browser of your choice, and enter the local IP address of the GN-MD01 AirCruiser G Game Adapter into the address line of browser. (The factory default local IP is 192.168.1.1) and press **Enter**.

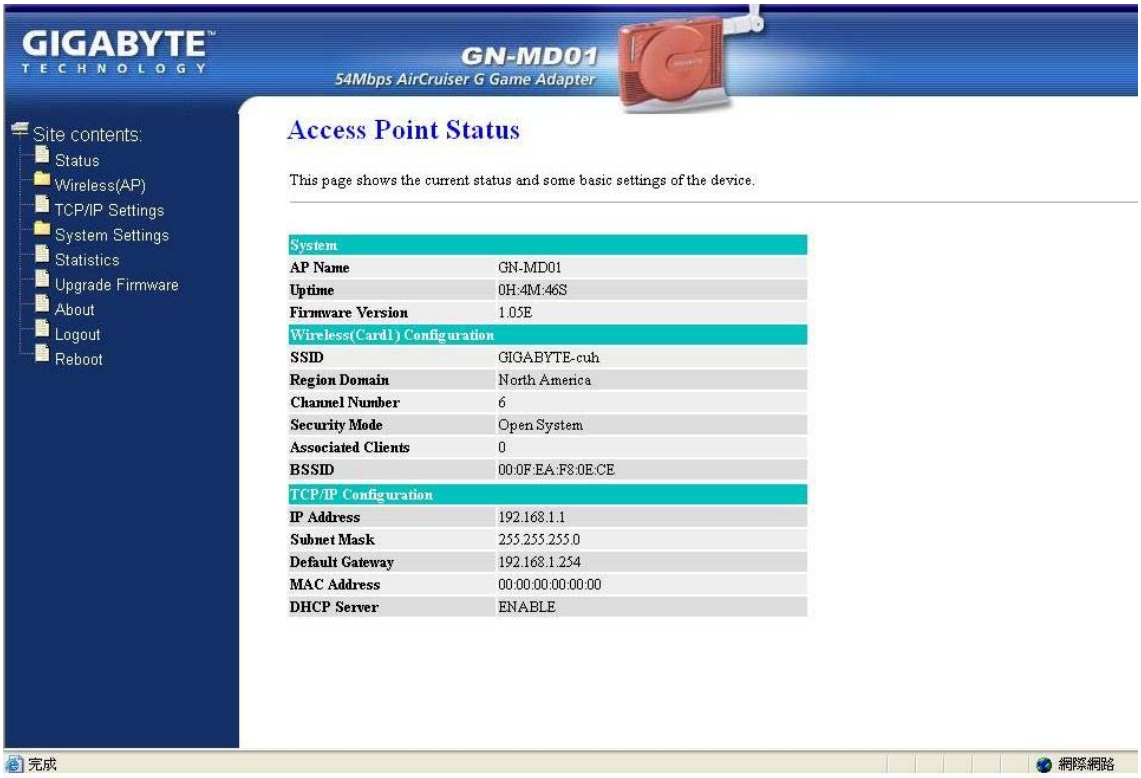
The screen shown as below will appear. In lowercase letters, enter the default user name and password, **admin**, in the User Name and *Password* fields. Click the **OK** button.



Configuring the Adapter for Access Point Mode Access

Status

You can use this status screen to view the Game Adapter's system information, current connection status and configuration.



Wireless Basic Settings

The Game Adapter will automatically detect and display your wireless settings. Changes of these settings will influence your wireless connection and performance.

SSID

ESSID (or SSID as it is usually referred to) is the network name of the Game Adapter in the wireless network. You should set the same SSID name for all your wireless-equipped devices to allow dynamic clients to easily roam among them. The SSID name can be up to 32 characters in length and is case sensitive (i.e. upper case letters **"A~Z"** and lower case **"a~z"** are unique).

Channel Number

Please choose the channel for best performance. Normally, no change is needed.

Transmit Rate

Select the desired data rate. The range is from 1 to 54Mbps and the default rate is set to "Auto".

802.11g Only Mode

Enabled -- No Wireless-B clients will be allowed on the network.
Disabled – Both Wireless-G and Wireless-B clients will be allowed on the network. (Default setting)

Hidden ESSID

This setting enables you to hide ESSID name, which is needed by clients in order to connect to the Game Adapter. The default value is **"Disable"**. In this setting, ***all users are able to read your AP's SSID name.***

RF Radio

Enable or disable the RF Radio function.

Associated Clients

Click **"Show Active Clients"** button to obtain the connecting users' information.

Wireless Security Setting

Use this feature to set up the security types for the Game Adapter. Five security types are available: Open System, Shared Key, 802.1x, WPA and WPA Pre-Shared Key.

*** Open system**

Allows any device to connect to the network, assuming that the device and access point's share the same SSID.

*** Shared Key**

Only those computers that have the correct authentication key can join the network.

Key Length choice

Disable - No encryption will be applied.

64-bit - enter 5 hexadecimal digits.

128-bit - enter 13 hexadecimal digits.

*** 802.1x**

802.1x is IEEE standard for EAP encapsulation over wired or wireless Ethernet. 802.1x uses three terms that you need to know. The user or client that wants to be authenticated is called a supplicant. The actual server doing the authentication, typically a RADIUS server, is called the authentication server. And the device in between, such as a wireless access point, is called the authenticator. One of the key points of 802.1x is that the authenticator can be simple and dumb - all of the brains have to be in the supplicant and the authentication server. This makes 802.1x ideal for wireless access points, which are typically small and have little memory and processing power.

RADIUD Server IP – Assign an IP address for the RADIUS Server.
RADIUS Port – Enter a value within the range 1~65536 for port.
RADIUS Secret – Enter a password up to 32 ASCII characters (uppercase “A~Z”, lowercase “a~z”, or numeric “0~9”) in length.
RADIUS Re-key – Lets you enable or disable the RADIUS Re-Key function.

* WPA (Wi-Fi Protected Access)

If you have used Wi-Fi for a while, you may be familiar with 802.1x Authentication Protocol, which allows users to authenticate the wireless network via RADIUS server. The 802.1x Authentication Protocol is an option in standard Wi-Fi but a must for WPA.

RADIUD Server IP – Assign an IP address for the RADIUS Server.
RADIUS Port – Enter a value within the range 1~65536 for port.
RADIUS Secret – Enter a password up to 32 ASCII characters (uppercase “A~Z”, lowercase “a~z”, or numeric “0~9”) in length.
RADIUS Re-key – Lets you enable or disable the RADIUS Re-Key function.
Cipher Algorithms – Two options you can choose: TKIP and AES settings.
Group Re-key - Lets you enable or disable the RADIUS Re-Key function.

* WPA Pre-Shared Key

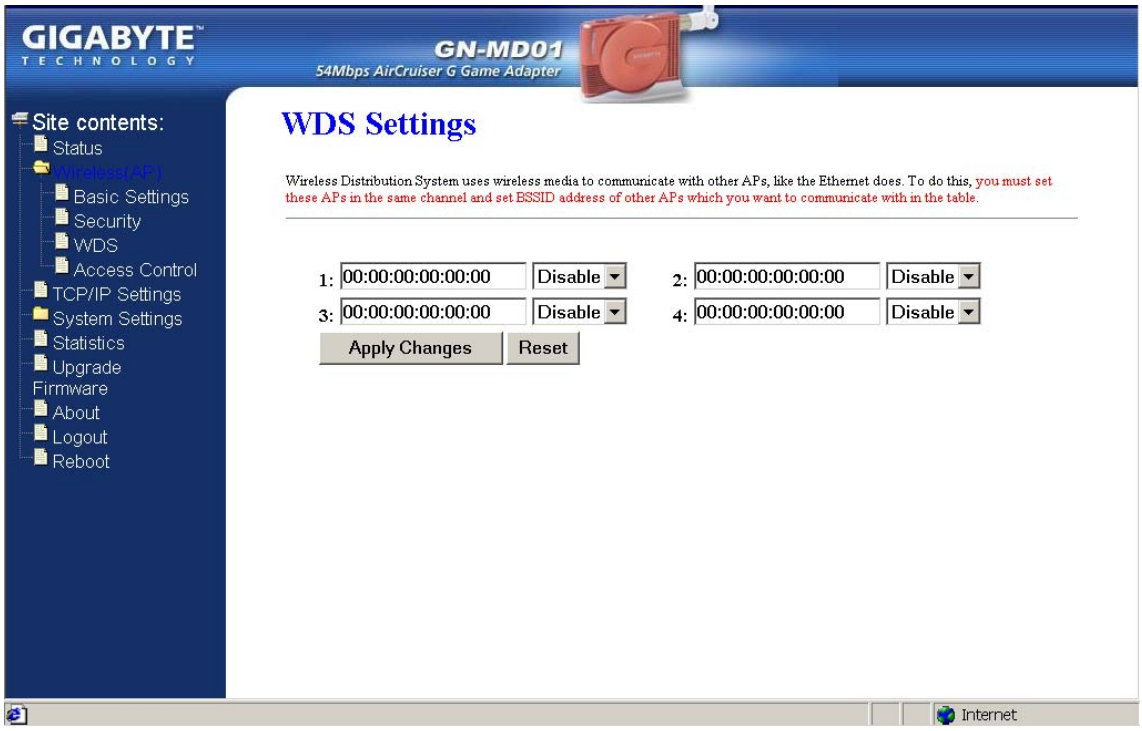
Traditional WEP had an inconvenient method to change encrypted keys. Even when you changed the encrypted keys; you still can not select all APs and wireless LAN adapter while you are changing encrypted keys.

The manual re-keying which is necessary with WEP is a tedious manual process and is completely impractical for large organizations. After all, the instant you re-key an access point, none of the clients will be able to access it until they too are re-keyed. But with WPA, the re-keying of global encryption keys is all that is necessary. In the case of unicast traffic, the encryption key is changed after every frame using Temporary Key Integrity Protocol (TKIP). This protocol allows key changes to occur on a frame-by-frame basis and to be automatically synchronized between the access point and the wireless client. Global re-keying works by advertising the new keys to wireless clients.

Cipher Algorithms – Two options you can choose: TKIP and AES settings.
Group Re-key - Two options: Enabled or Disabled.
Pre-Shared key - Enter a password up to 63 ASCII characters (uppercase “A~Z”, lowercase “a~z”, or numeric “0~9”) in length.

WDS Settings

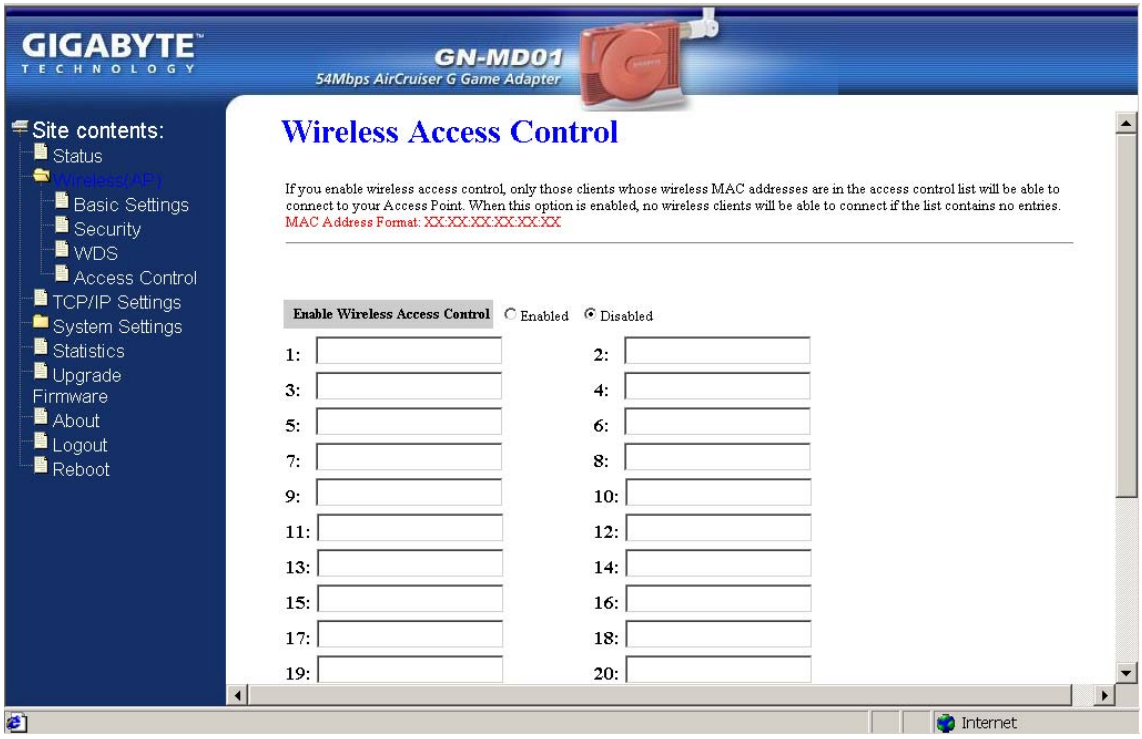
The WDS function allows several of the access points to compose a wide Wireless LAN network. Please note all APs must be set to use the same channel and the SSID of all participating APs must also be the same.



WDS technologies between AP manufacturers vary widely, so you may not be able to establish WDS between APs from different brands.

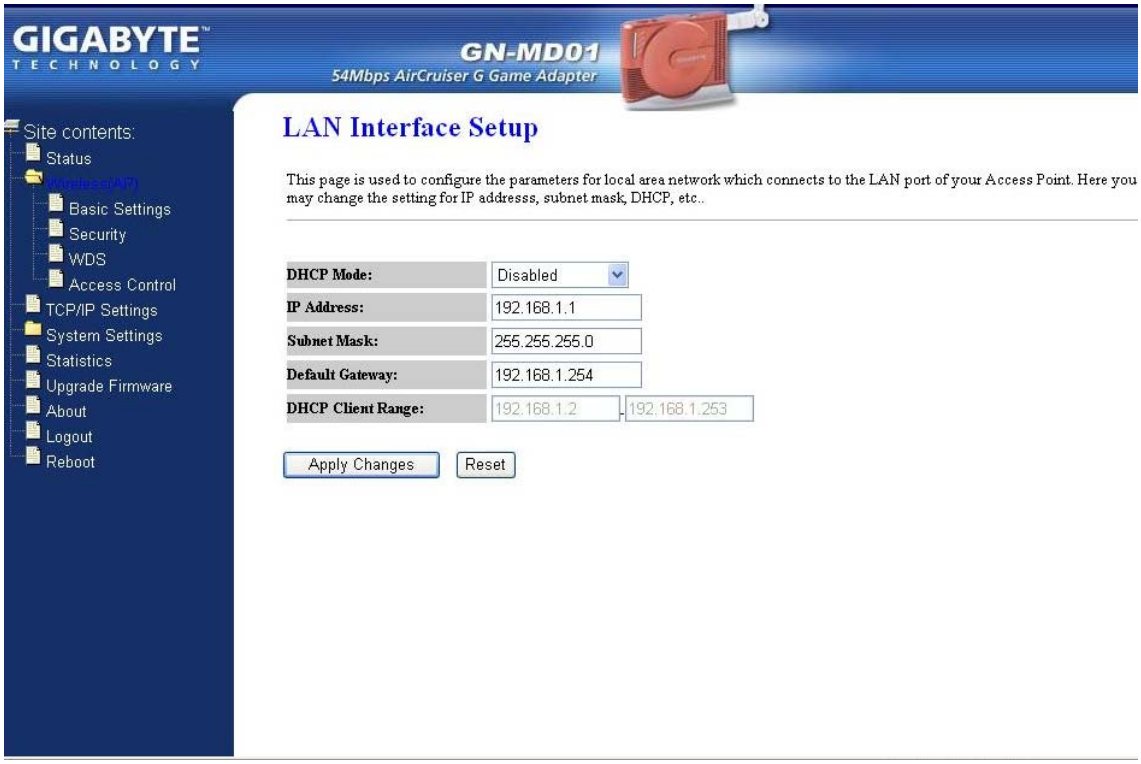
Wireless Access Control

You may specify users based on their MAC addresses that are authorized to connect to the AP. Only computers listed in the table can connect to AP when this function is enabled.



TCP/IP Settings

You may set up IP parameters for APs through TCP/IP setting screen.



DHCP Mode

Three (3) options are available: “Disabled”, “Client Enabled” , “Server Enabled”. The default value is “Server Enabled”.

If you want to obtain IP addresses from a DHCP server, select **“Client Enabled”**. To use an AP as a DHCP server and assign a dynamic IP address automatically on the network, select **“Server Enabled”**.

IP Address

Assign an IP address to the AP with this option. The default IP address is 192.168.1.1. Please make sure the assigned IP address is exclusive for the AP.

Subnet Mask

Assign a Subnet Mask for an AP. The default Subnet Mask is 255.255.255.0.

Default Gateway

Enter the IP address for the default router. The default gateway is 192.168.1.1.

DHCP Client Range

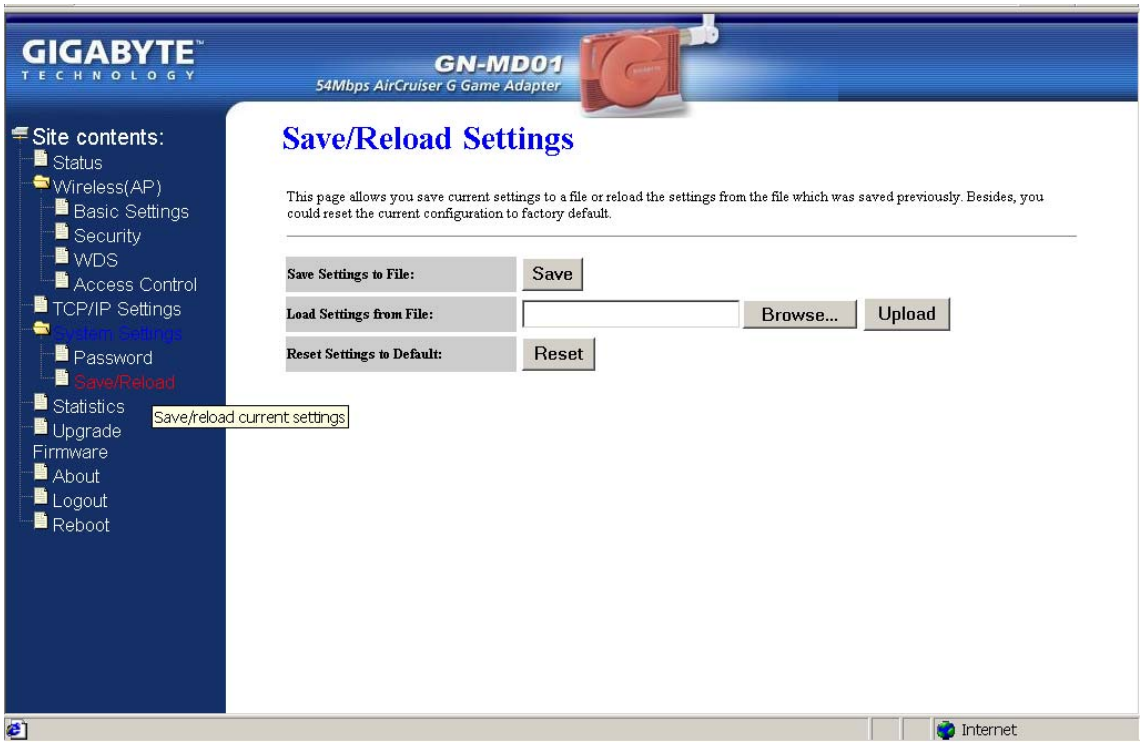
When “Server Enabled” is selected, please enter the range of your IP addresses.

System Settings-Password Setup

Here you can set up administrator's user name and password to protect administrative access to the AP. Key in a password and confirm, then press Apply Changes. Note, if you leave the password fields blank, password feature is disabled.

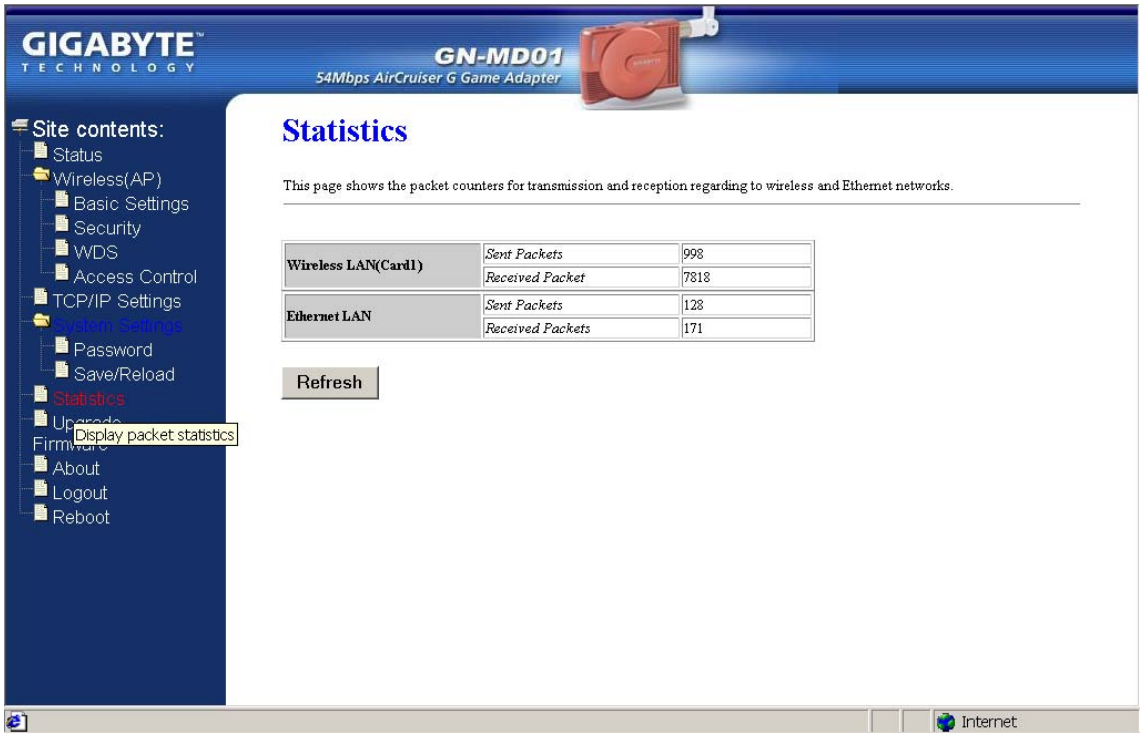
System Settings-Save/Reload Settings

You may save the current configuration as a file for restoring configuration in the future. You may press “Reset” to restore to factory default.



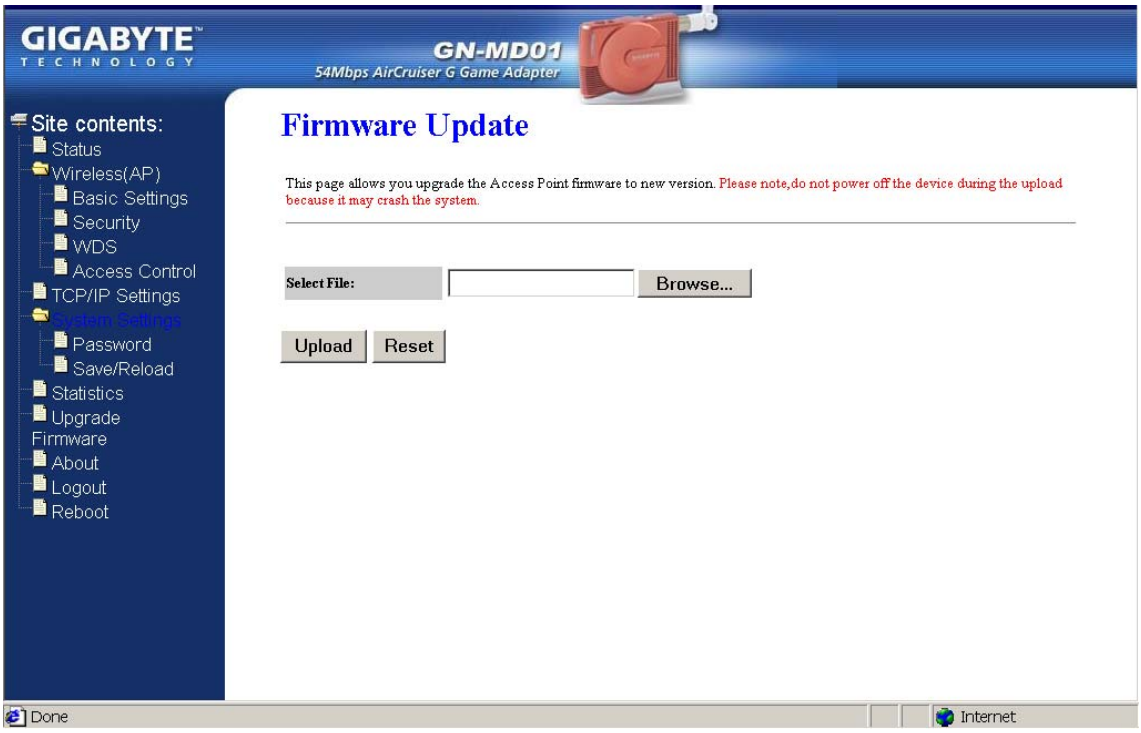
Statistics

Statistics shows you the packets flow status on the wireless LAN and Ethernet.



Upgrade Firmware

Upgrade the firmware with the latest firmware version available for download from the GIGABYTE website.



About

View firmware information.

Logout

Logout from the configuration webpage when finished setup.

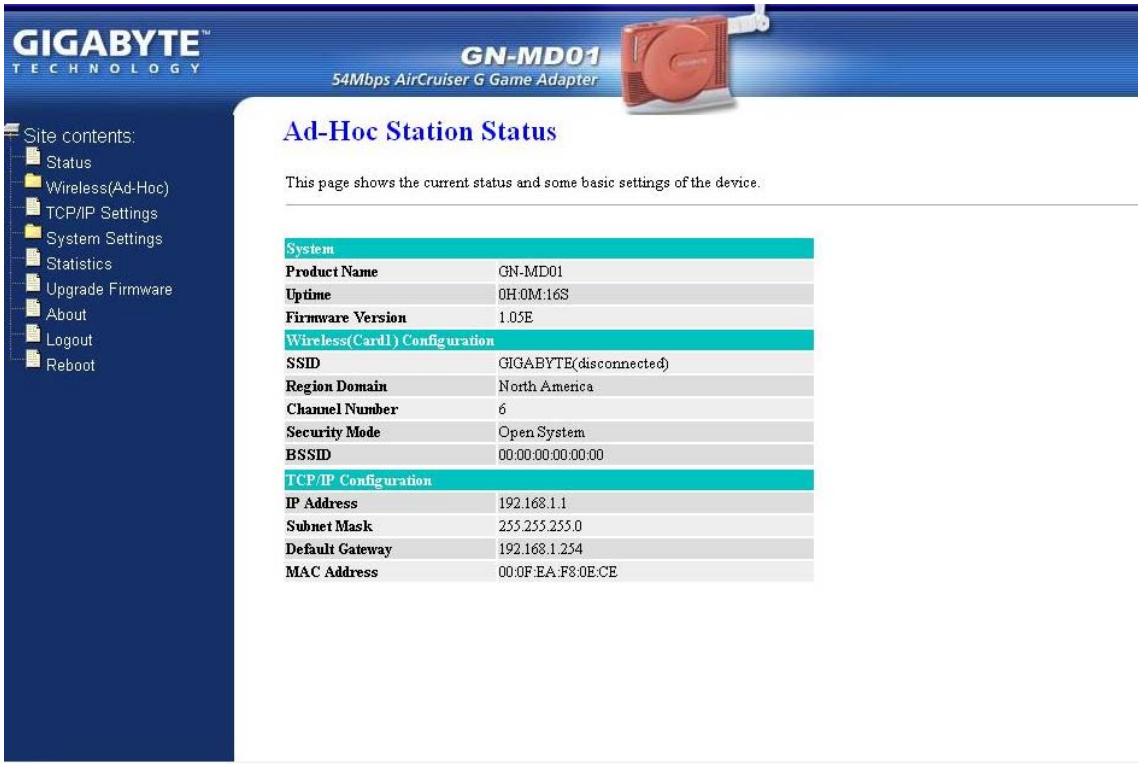
Reboot

Reboot the GN-MD01. The system may take up to 30 seconds to save your settings, please allow the system to reboot itself.

Configuring the Adapter for Ad-Hoc Mode Access

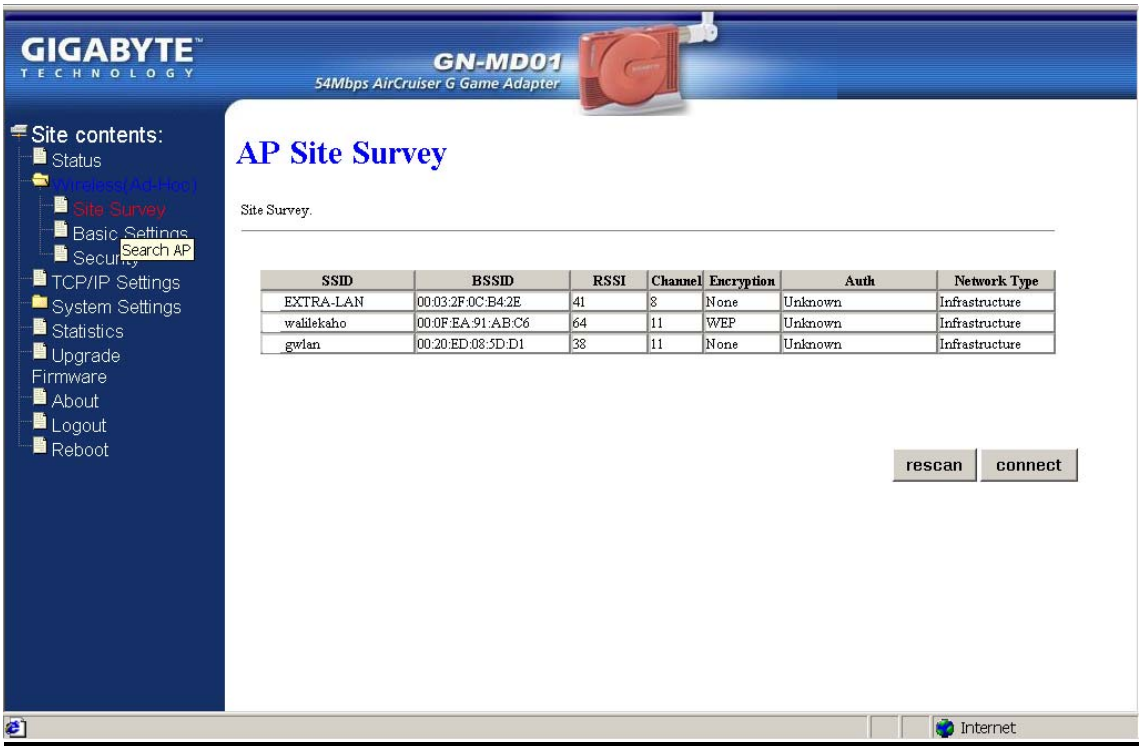
Status

You can use this status screen to view the Game Adapter's system information, current connection status and configuration.



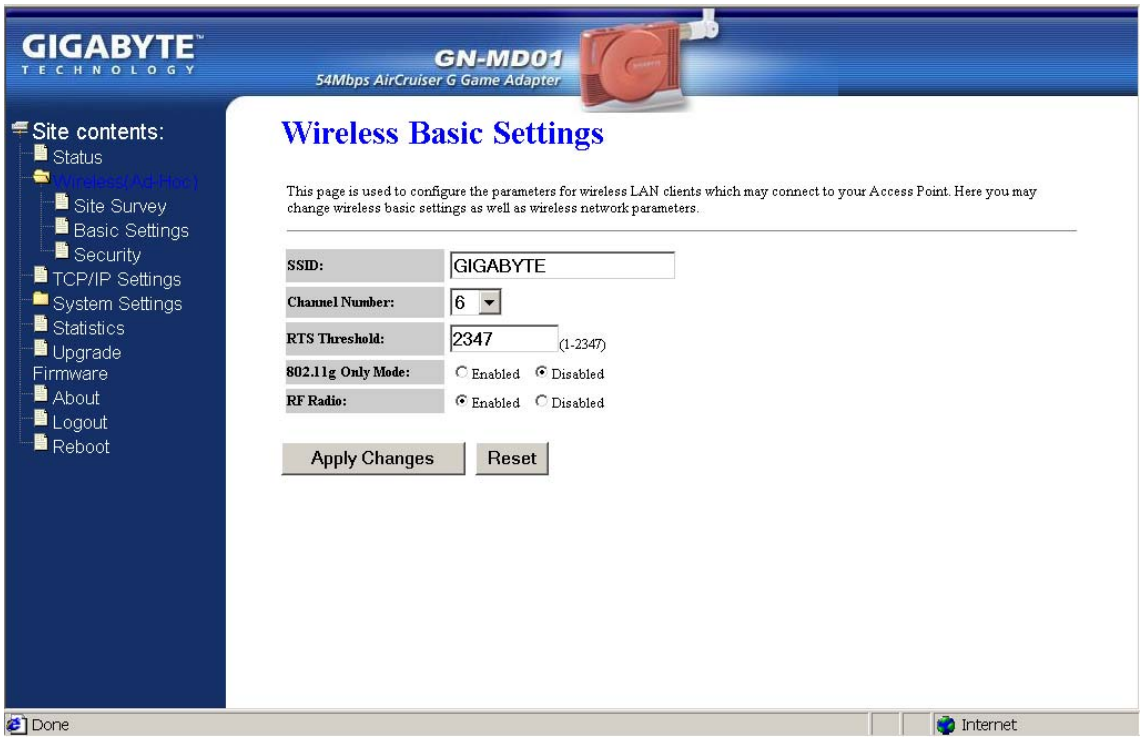
AP Site Survey

This AP Site Survey screen shows the wireless networks that the AirCruiser G Game Adapter detects. The SSID, BSSID, RSSI, Channel, Encryption, Auth, Network Type for each network are displayed.



Wireless Basic Settings

The Game Adapter will automatically detect and display your wireless settings Changes of these settings will influence your wireless connection and
performance.



SSID

ESSID (or SSID as it is usually referred to) is the network name of the Game Adapter in the wireless network. You should set the same SSID name for all your wireless-equipped devices to allow dynamic clients to easily roam among them. The SSID name can be up to 32 characters in length and is case sensitive (i.e. upper case letters **"A~Z"** and lower case **"a~z"** are unique).

Channel Number

Please choose the channel for best performance. Normally, no change is needed.

RTS Threshold

The default value of "2347" should not be changed. However, in case of inconsistent data flow, adjustment the value to a lower number and retry. Enter a value within the range 0~2347 for the port. RTS (Request To Send) is a function, requesting permission to transmit signals. RTS is a collision avoidance method used by all 802.11b wireless networking devices. In most cases you will not need to activate or administer RTS. Generally, RTS only needs to be configured if you find yourself in an Infrastructure environment where all nodes are in range of the Access Point but may be out of range of each other.

802.11g Only Mode

Enabled -- No Wireless-B clients will be allowed on the network.

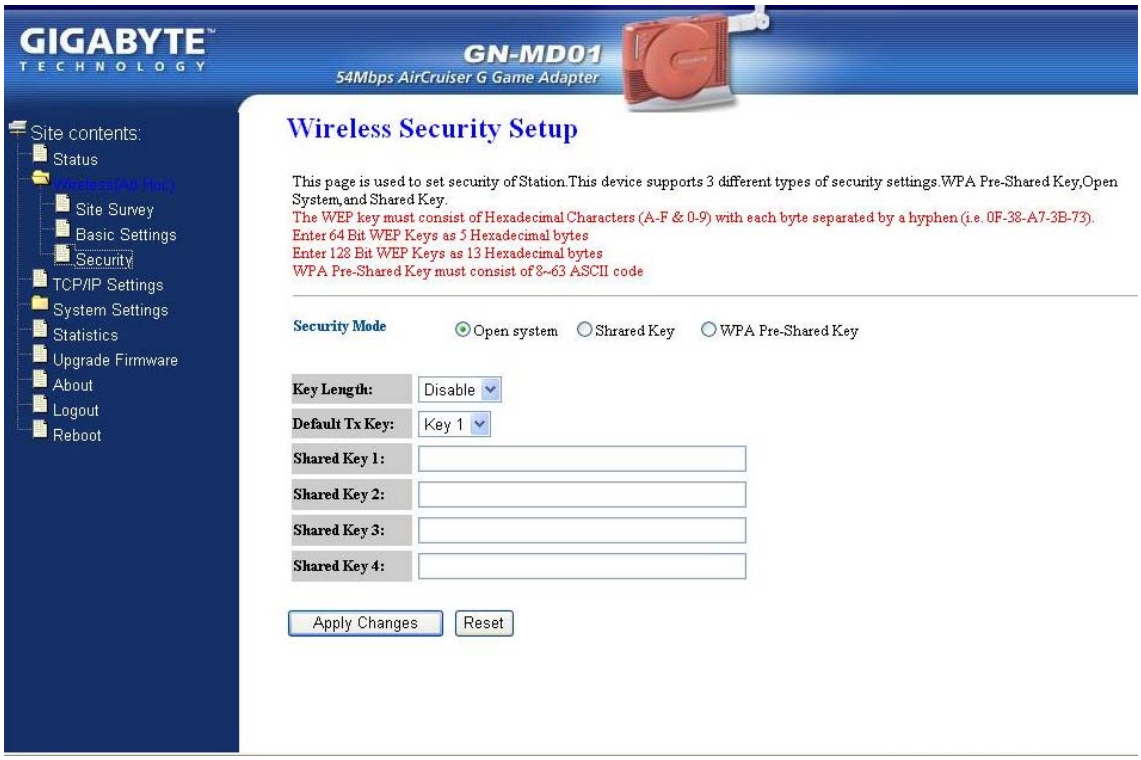
Disabled – Both Wireless-G and Wireless-B clients will be allowed on the network. (Default setting)

RF Radio

Enable or disable the RF Radio function.

Wireless Security Setting

Use this feature to set up the security types for the Game Adapter. Three security settings are available: Open System, Shared Key, and WPA Pre-shared Key. Please note that WPA Pre-shared Key is not support at Ad-Hoc mode.



*** Open system**

Allows any device to connect to the network, assuming that the device and access point's share the same SSID.

*** Shared Key**

Only those computers that have the correct authentication key can join the network.

Key Length choice

Disable - No encryption will be applied.

64-bit - enter 5 hexadecimal digits.

128-bit - enter 13 hexadecimal digits.

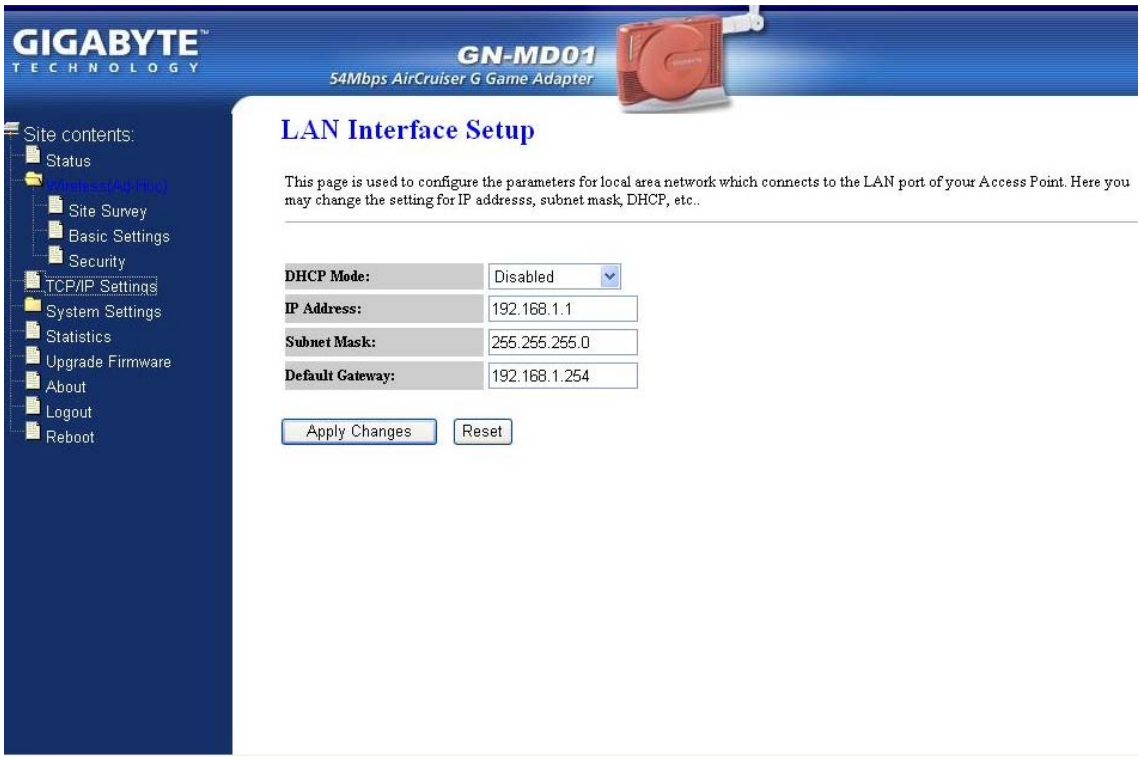
*** WPA Pre-Shared Key**

A mechanism in Wi-Fi Protected Access (WPA)—Personal that allows the use of manually entered keys or passwords to initiate WPA security. The PSK is entered on the access point or home wireless gateway and each PC that is on the Wi-Fi network. After entering the password, Wi-Fi Protected Access automatically takes over. It keeps out eavesdroppers and other unauthorized users by requiring all devices to have the matching password.

Pre-Shared key - Enter a password up to 63 ASCII characters (uppercase “A~Z”, lowercase “a~z”, or numeric “0~9”) in length.

TCP/IP Settings

Manage IP parameters through TCP/IP setting screen.



DHCP Mode

Two (2) options are available: “Disabled”, “Client Enabled”. The default value is “Disabled”.

IP Address

Assign an IP address to the Game Adapter with this option. The default IP address is 192.168.1.1. Please make sure the assigned IP address is exclusive for the Game Adapter.

Subnet Mask

Assign a Subnet Mask for a Game Adapter. The default Subnet Mask is 255.255.255.0.

Default Gateway

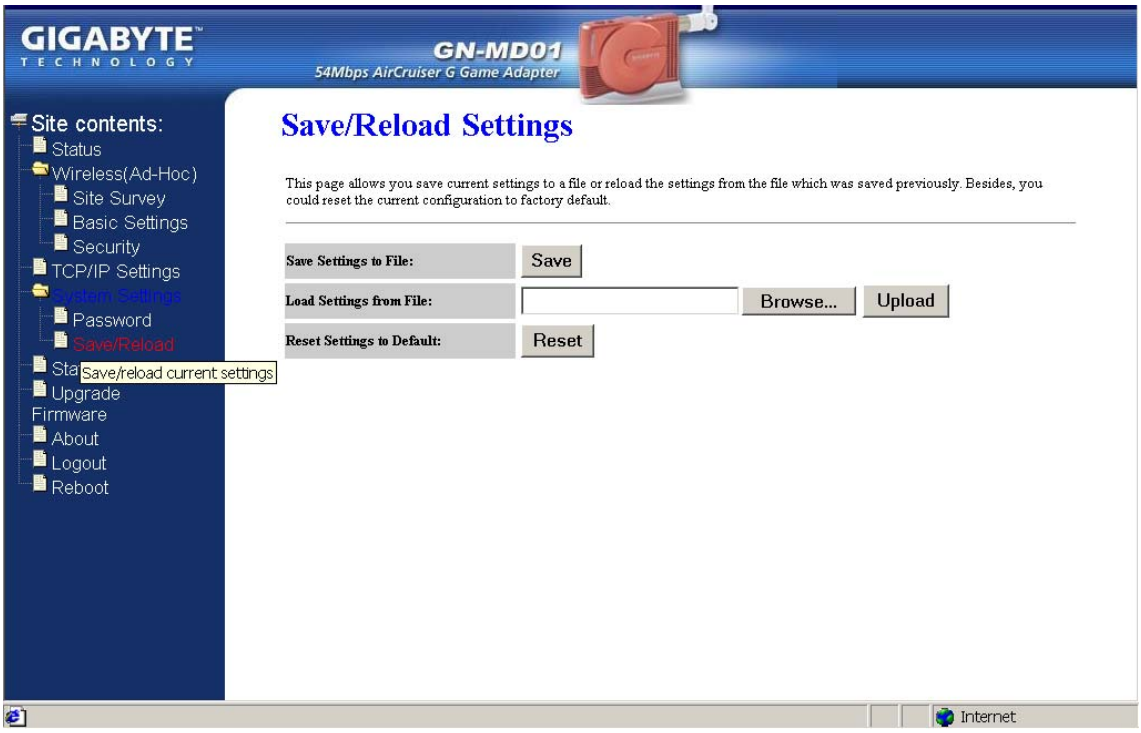
Enter the IP address for the default router. The default gateway is 192.168.1.1.

System Settings-Password Setup

Here you can set up administrator's user name and password to protect administrative access to the AP. Key in a password and confirm, then press Apply Changes. NOTE: If you leave the password field blank, the password feature is disabled.

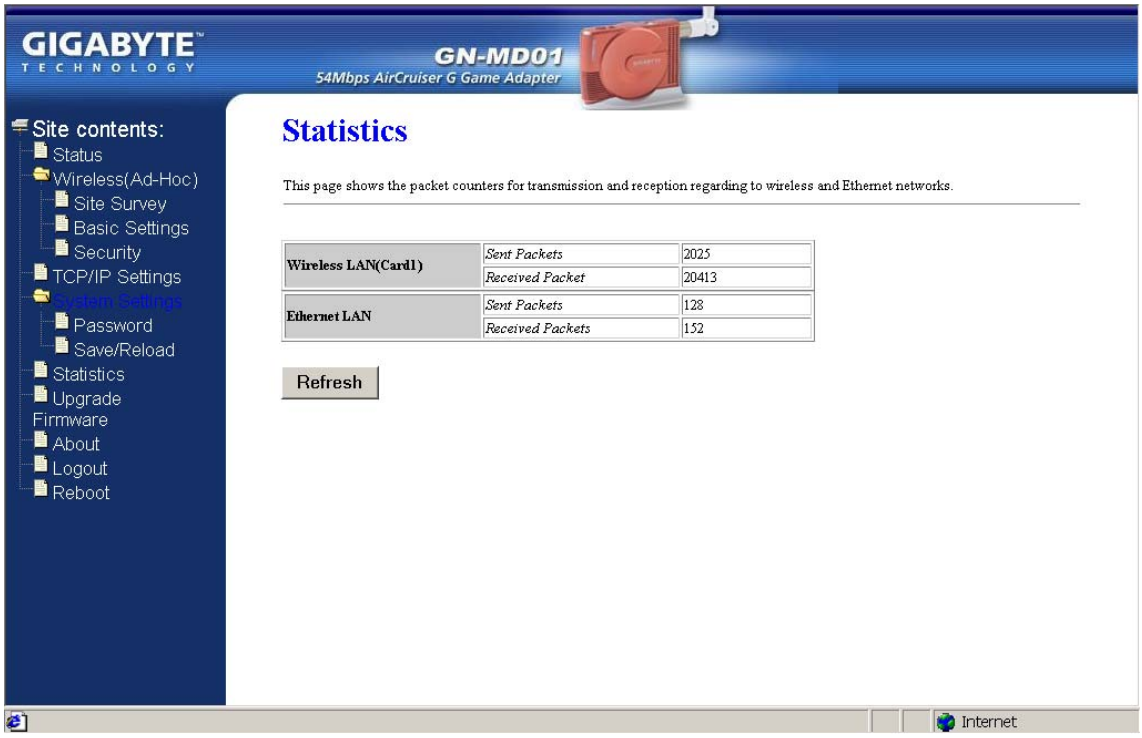
System Settings-Save/Reload Settings

Save the current configuration settings as a file. Press “Reset” to restore unit settings to factory defaults.



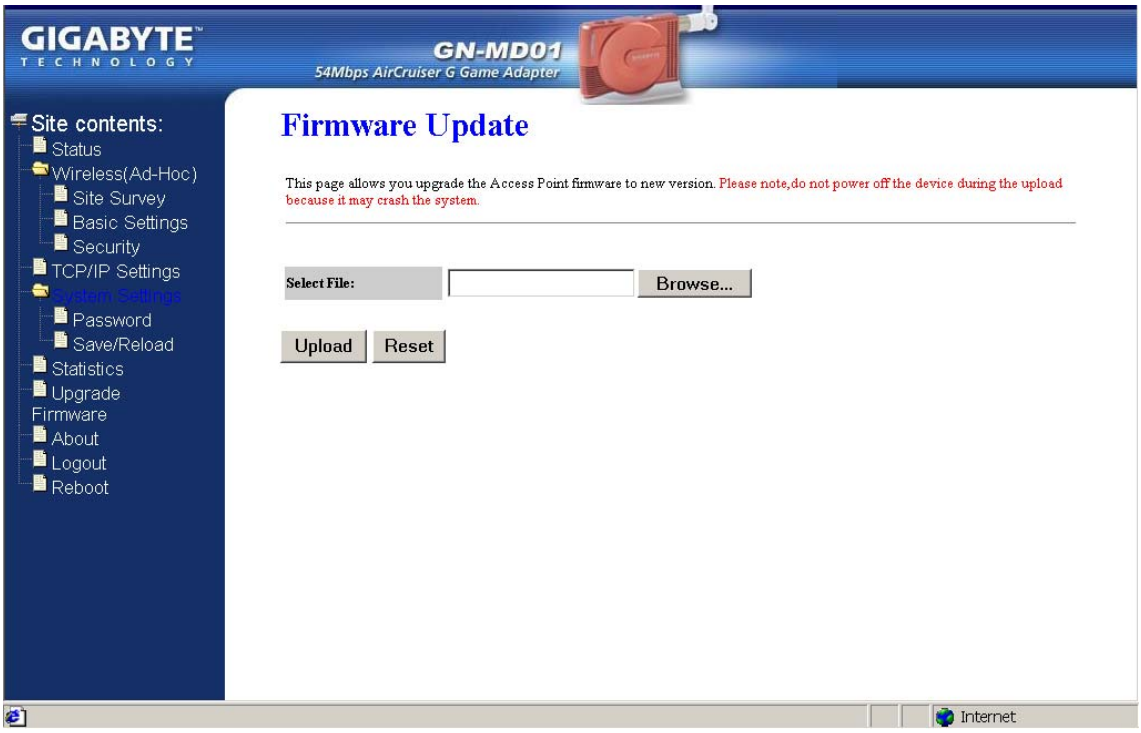
Statistics

Statistics shows you the packets flow status on the wireless LAN and Ethernet.



Upgrade Firmware

Upgrade the firmware with the latest firmware version available for download from the GIGABYTE website.



About

View firmware information.

Logout

Logout from the configuration webpage when setup complete.

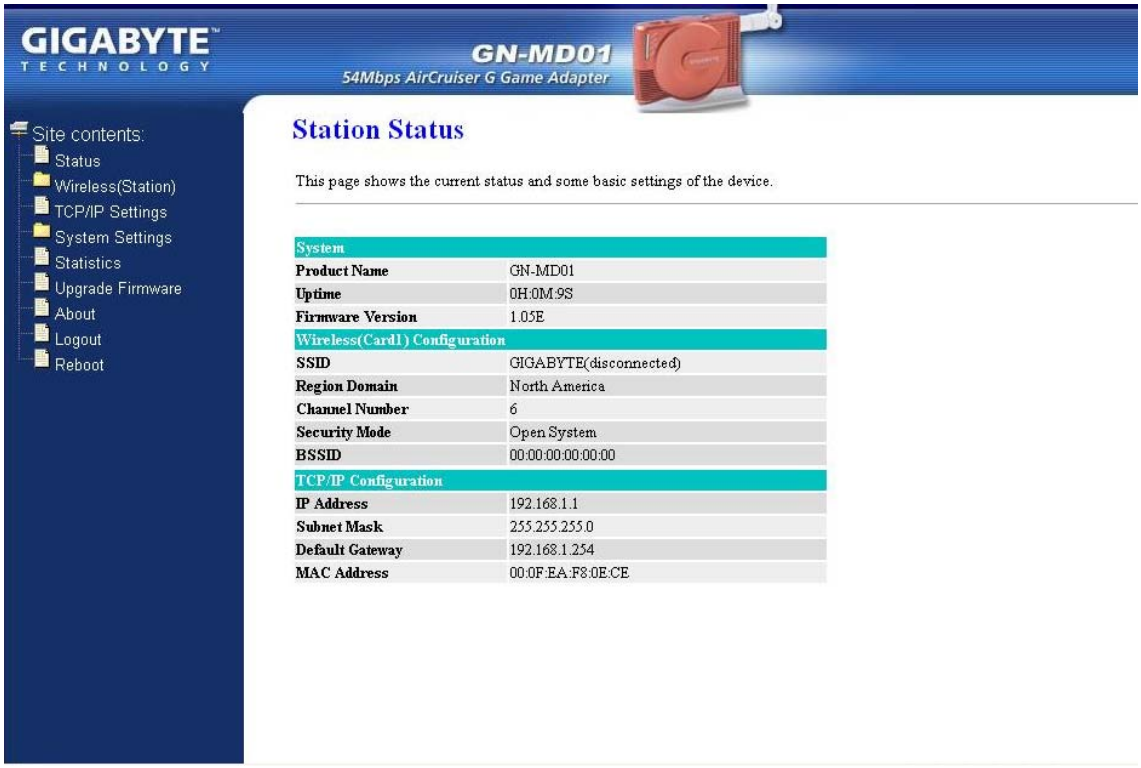
Reboot

Reboots the device. The system may need up to a minute to save your settings, please allow the system to reboot itself.

Configuring the Adapter for Ethernet Adapter Mode Access

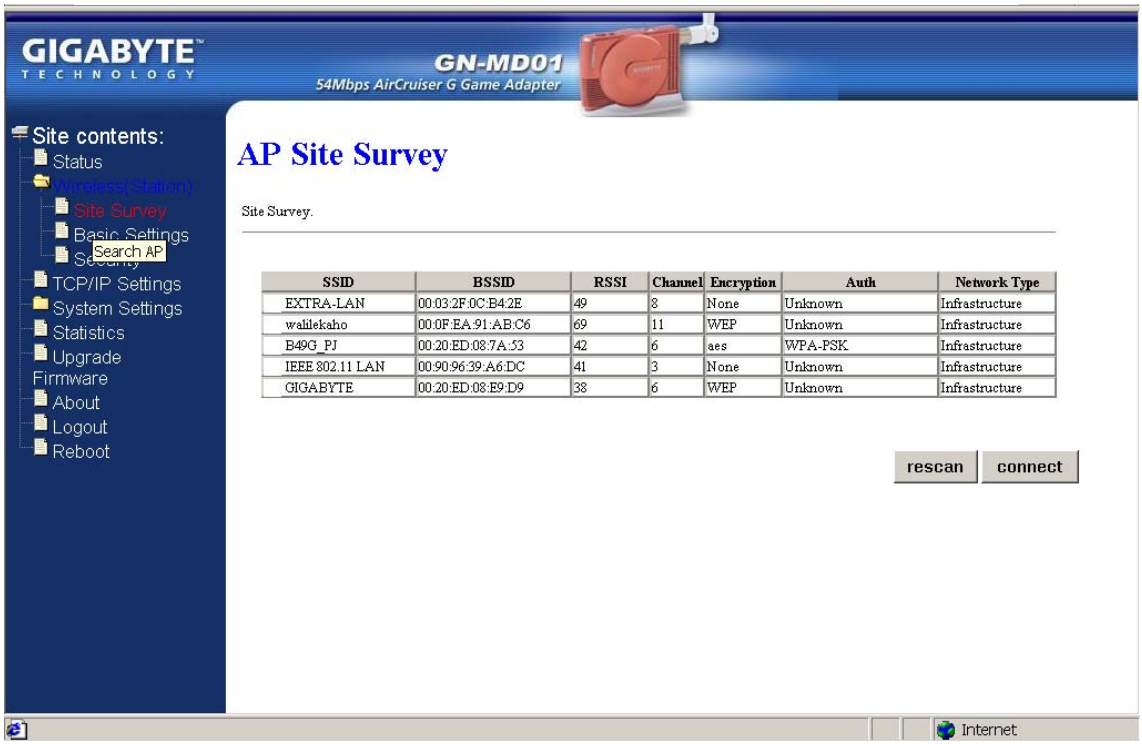
Status

You can use this status screen to view the Game Adapter's system information, current connection status and configuration.



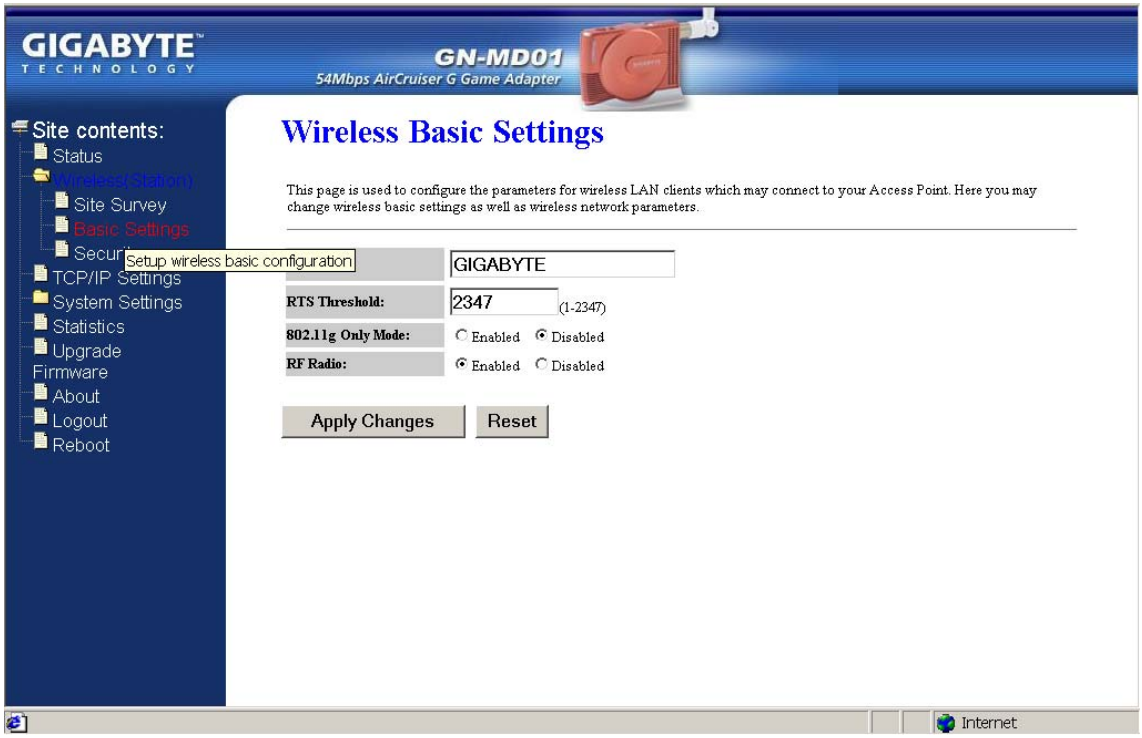
AP Site Survey

This AP Site Survey screen shows the wireless networks that the AirCruiser G Game Adapter detects. The SSID, BSSID, RSSI, Channel, Encryption, Auth, Network Type for each network are displayed.



Wireless Basic Settings

The Game Adapter will automatically detect your wireless settings. Typically, modification to the default settings is required. Changes of these settings will influence your wireless connection and performance.



SSID

ESSID (or SSID as it is usually referred to) is the network name of the Game Adapter in the wireless network. You should set the same SSID name for all your wireless-equipped devices to allow dynamic clients to easily roam among them. The SSID name can be up to 32 characters in length and is case sensitive (i.e. upper case letters **"A~Z"** and lower case **"a~z"** are unique).

RTS Threshold

The default value of "2347" should not be changed. However, in case of inconsistent data flow, adjustment the value to a lower number and retry. Enter a value within the range 0~2347 for the port. RTS (Request To Send) is a function, requesting permission to transmit signals. RTS is a collision avoidance method used by all 802.11b wireless networking devices. In most cases you will not need to activate or administer RTS. Generally, RTS only needs to be configured if you find yourself in an Infrastructure environment where all nodes are in range of the Access Point but may be out of range of each other.

802.11g Only Mode

Enabled -- No Wireless-B clients will be allowed on the network.

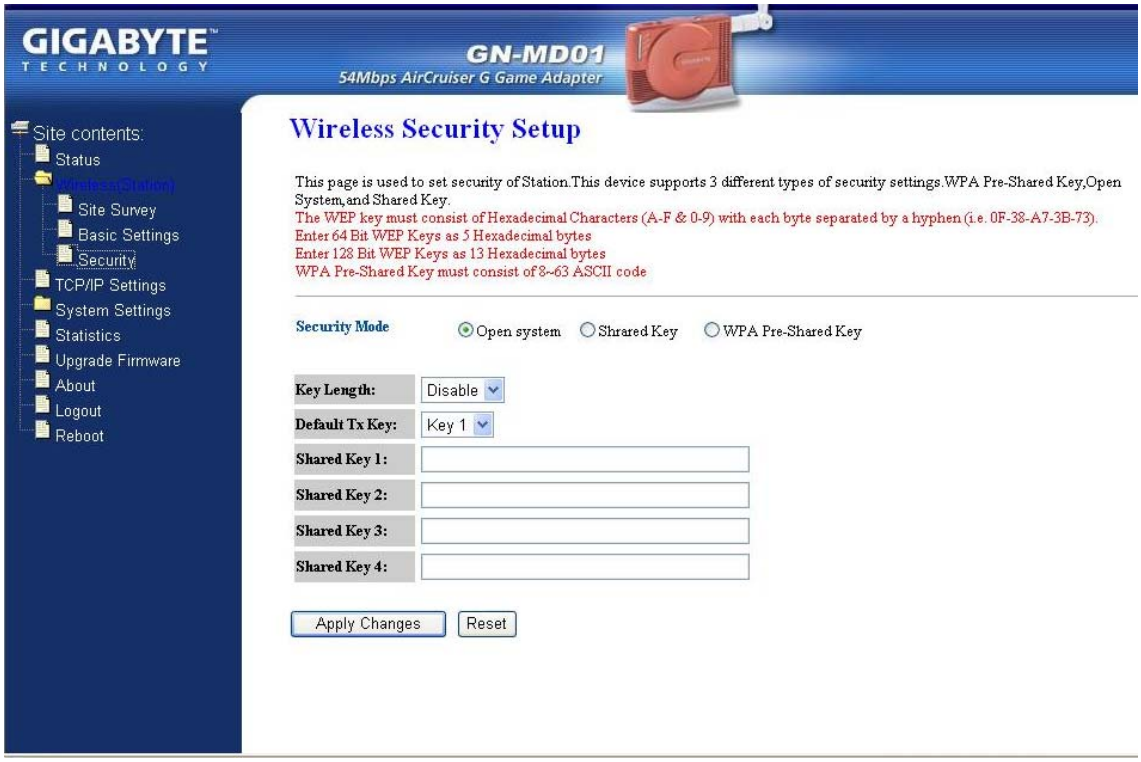
Disabled – Both Wireless-G and Wireless-B clients will be allowed on the network. (Default setting)

RF Radio

Enable or disable the RF Radio function.

Wireless Security Setting

Use this feature to set up the security types for the Game Adapter. Three security settings are available: Open System, Shared Key and WPA Pre-Shared Key.



*** Open System**

Allows any device to connect to the network, assuming that the device and access point's share the same SSID.

*** Shared Key**

Only those computers that have the correct authentication key can join the network.

Key Length choice

Disable - No encryption will be applied.

64-bit - enter 5 hexadecimal digits.

128-bit - enter 13 hexadecimal digits.

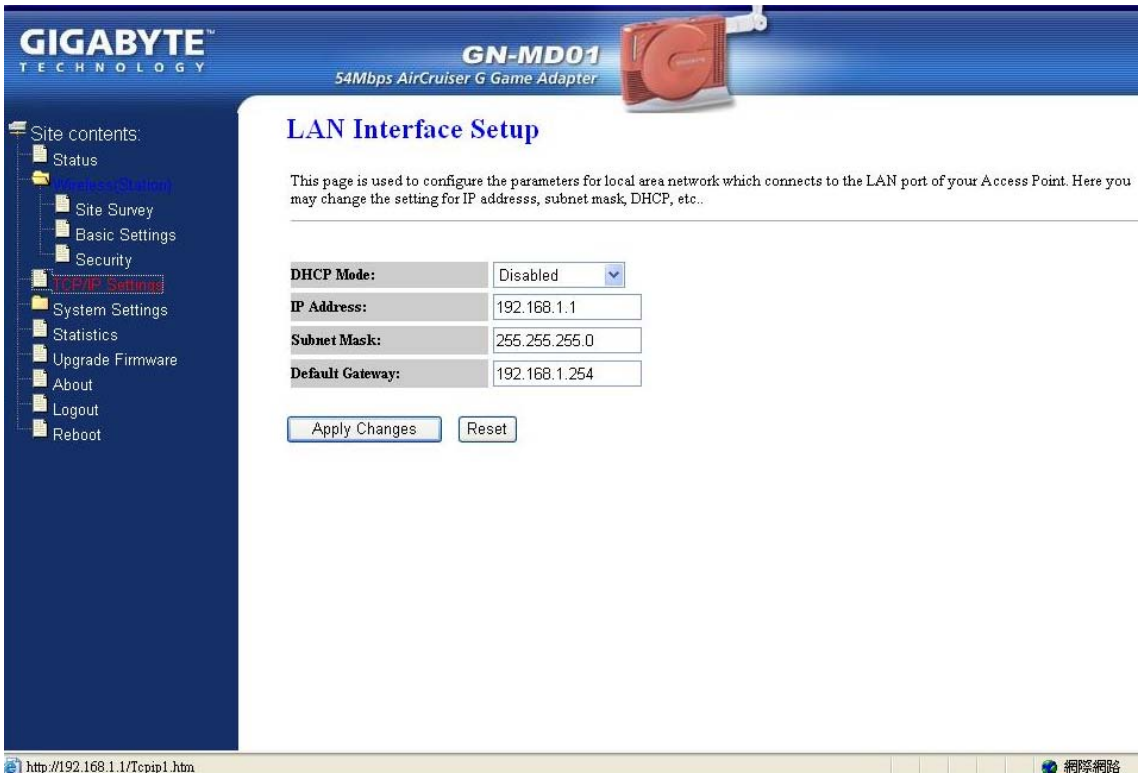
*** WPA Pre-Shared Key**

A mechanism in Wi-Fi Protected Access (WPA)—Personal that allows the use of manually entered keys or passwords to initiate WPA security. The PSK is entered on the access point or home wireless gateway and each PC that is on the Wi-Fi network. After entering the password, Wi-Fi Protected Access automatically takes over. It keeps out eavesdroppers and other unauthorized users by requiring all devices to have the matching password.

Pre-Shared key - Enter a password up to 63 ASCII characters (uppercase “A~Z”, lowercase “a~z”, or numeric “0~9”) in length.

TCP/IP Settings

Manage IP parameters through TCP/IP setting screen.



DHCP Mode

Two (2) options are available: “Disabled”, “Client Enabled”. The default value is “Disabled”.

IP Address

Assign an IP address to the Game Adapter with this option. The default IP address is 192.168.1.1. Please make sure the assigned IP address is exclusive for the Game Adapter.

Subnet Mask

Assign a Subnet Mask for a Game Adapter. The default Subnet Mask is 255.255.255.0.

Default Gateway

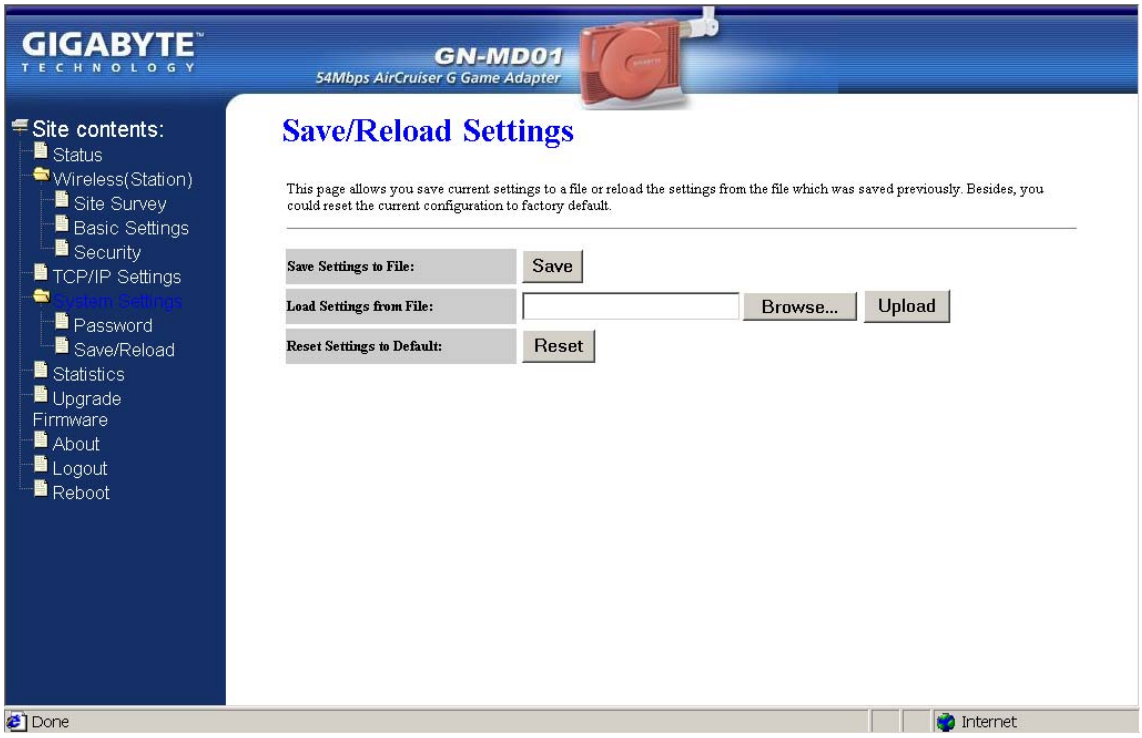
Enter the IP address for the default router. The default gateway is 192.168.1.1.

System Settings-Password Setup

Here you can set up administrator's user name and password to protect administrative access to the AP. Key in a password and confirm, then press Apply Changes. NOTE: If you leave the password field blank, the password feature is disabled.

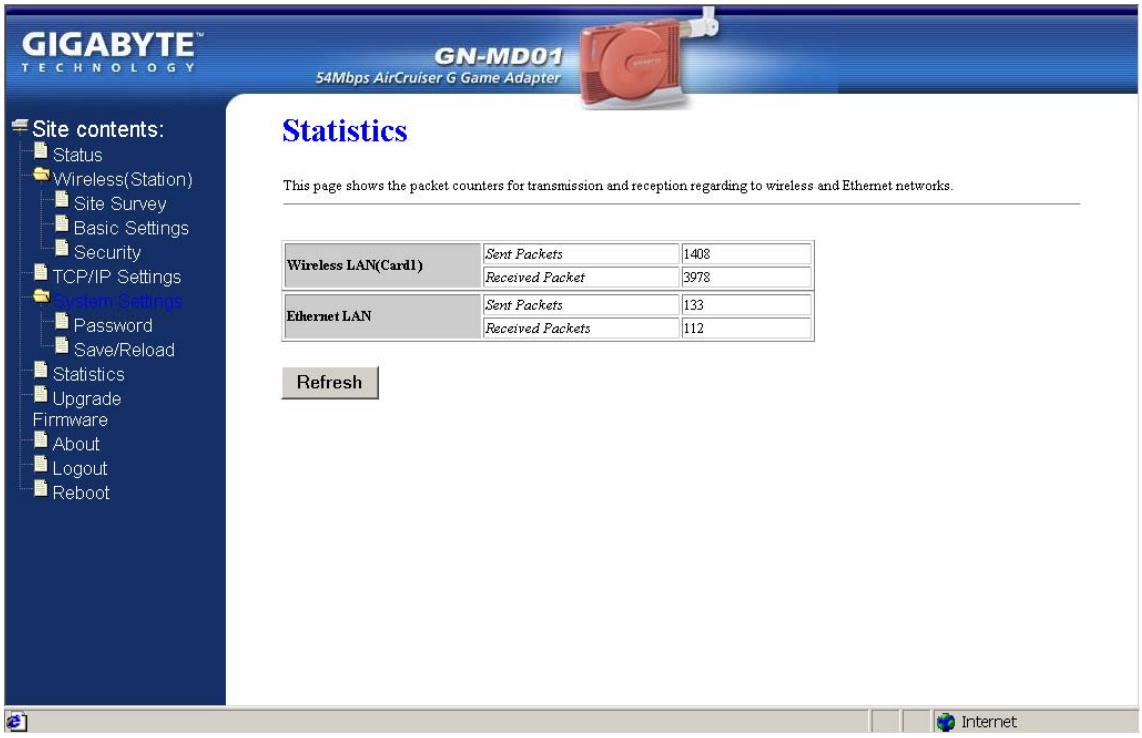
System Settings-Save/Reload Settings

Save the current configuration settings as a file. Press “Reset” to restore unit settings to factory defaults.



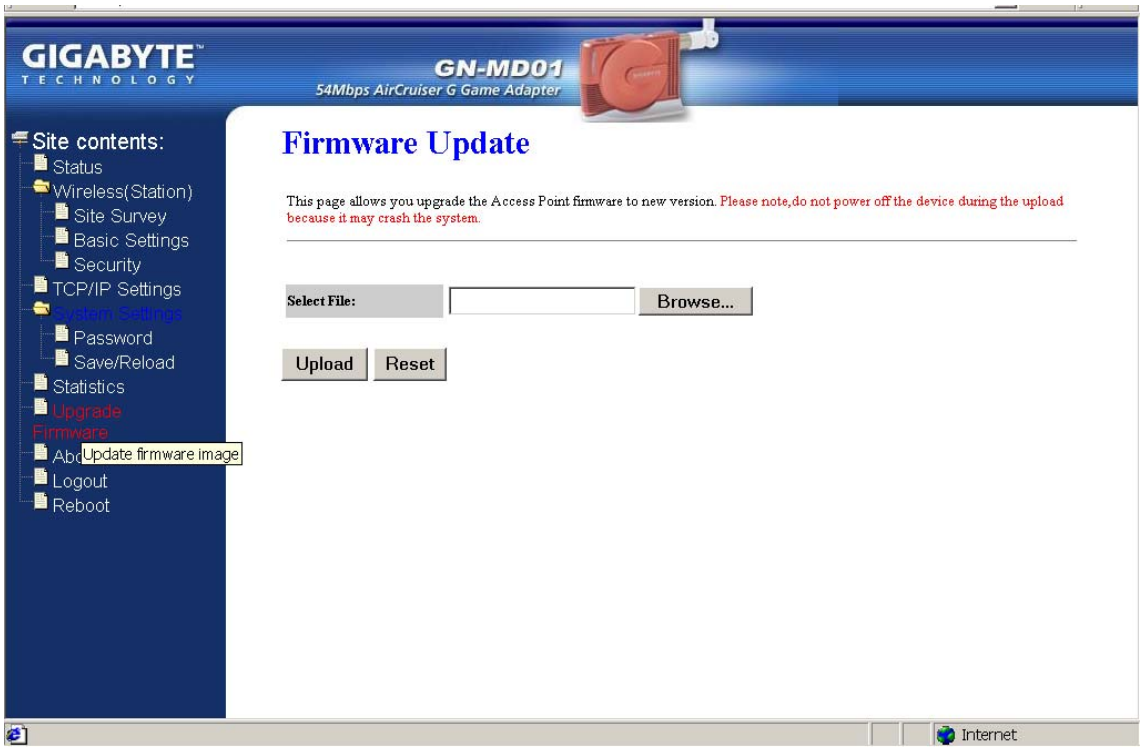
Statistics

Statistics shows you the packets flow status on the wireless LAN and Ethernet.



Upgrade Firmware

Upgrade the firmware with the latest firmware version available for download from the GIGABYTE website.



About

View firmware information.

Logout

Logout from the configuration webpage when setup complete.

Reboot

Reboot the GN-MD01. The system may need up to a minute to save your settings, please allow the system to reboot itself.

Chapter 4 Troubleshooting

This chapter gives information about troubleshooting your AirCruiser G Game Adapter. Read the descriptions below for assistance is diagnosing and solving the problem.

Q: What to do if you forget your password or forget the IP address of the Access Point?

A: Please press and hold for 5 seconds the **"init"** button at the bottom of the Access Point. The Access Point will be reset to the factory default values, and the password will be restored to factory default.

Q: I am unable to connect to the Internet.

A:
1. Confirm that the power cord is connected properly and the Game Adapter's power LED is correctly lit.
2. Check whether all of the settings described in this manual are correctly set.
3. Verify that your ADSL/Cable Modem is operating normally, and/or you have ISP service available.
4. Check that your network cable is connected correctly, and the LED status is normal.

Q: I am unable to access the Game Adapter's Web Configuration Interface.

A:
1. Please check the Ethernet connection (RJ-45 LAN cable) between the PC and the Access Point is properly connected.
2. Make sure your computer's IP address is on the same subnet as the Access Point. (Check this by typing `ipconfig /all` from a DOS command prompt)
3. Make sure you are carefully typing the correct IP address of the router in the address bar of your web browser. The IP address of your router is the "Gateway" address you see when you run the `ipconfig /all` command.
4. Try initializing your router to factory settings.

Q: What is the IEEE 802.11b standard?

A: It is also referred to as 802.11 High Rate or Wi-Fi. It is an expansion to 802.11 that applies to wireless LAN and provides 11 Mbps transmission (with a fallback to 5.5, 2 and 1 Mbps) in the 2.4 GHz band. The 802.11b uses only Direct Sequence Spread Spectrum (DSSS). The 802.11b was a 1999 ratification to the origianl 802.11 standard, allowing wireless functionality comparable to Ethernet.

Q: What is WEP?

A: Wired Equivalent Privacy (WEP). A security mechanism defined within the 802.11 standard and designed to make the link integrity of the wireless medium equal to wired cable.

Q: What is the IEEE 802.11g standard?

A: IEEE 802.11g standard specifies data rates of up to 54 Mbps in the 2.45-GHz band. It uses Orthogonal Frequency Division Multiplexing (OFDM), which is the mandatory provisions have been made within the standard to make it inherently compatible with the well-established 802.11b standard at 11 Mbps, which uses Complementary Code Keying (CCK) modulation. Both .11g and .11b can operate at ranges of up to 300 feet.

Appendix A: Glossary

10BaseT
The most common cabling method for Ethernet. 10BaseT conforms to IEEE standard 802.3. It was developed to enable data communications over unshielded twisted pair (telephone) wiring at speeds of up to 10 megabits per second up to distances of approximately 330 feet on a network segment.

802.11
A group of wireless networking standards, also known as Wi-Fi, set by the Institute of Electrical and Electronics Engineers (IEEE).

802.1X
A standard for port-based authentication, first used in wired networks, that was adapted for use in enterprise WLANs to address security flaws in WEP, the original security specification for 802.11 networks. 802.1X provides a framework for authenticating users and controlling their access to a protected network and dynamic encryption keys to protect data privacy.

Access Point
An Access Point is a wired controller that sends data to the wireless NIC's installed in your network computers, and received data back from them. An Access Point is often connected to the network computer that has Internet access, or is directly connected to an ADSL or cable modem.

Ad-Hoc mode
An old term used to describe a device-to-device network. (See device-to-device network, peer-to-peer network).

ADSL
Asymmetric digital subscriber line (ADSL) is a new modem technology that converts existing twisted-pair telephone lines into access paths for high-speed communication of various sorts.

AES
Advanced Encryption Standard. The preferred standard for the encryption of commercial and government data using a symmetric block data encryption technique. It is used in the implementation of WPA2.

Auto-MDI/MDIX
On a network hub or switch, an auto-MDI/MDIX port automatically senses if it needs to act as a MDI or MDIX port. The auto- MDI/MDIX capability eliminates the need for crossover cables.

Auto-negotiate
To automatically determine the correct setting. The term is often used with communications and networking.

Bridge
A wireless device that connects multiple networks together.

BSSID
Basic Service Set Identifier. A unique address that identifies the access point/router that creates the wireless network.

Channel
One portion of the available radio spectrum that all devices on a wireless network use to communicate. Changing the channel on the access point/router can help reduce interference.

Client
Any computer connected to a network that requests files and services (files, print capability) from the server or other devices on the network. The term also refers to end users.

Client devices
Wi-Fi client devices include PC Cards that slide into laptop computers, mini-PCI modules embedded in laptop computers and mobile computing devices, as well as USB radios and PCI/ISA bus Wi-Fi radios. Client devices usually communicate with hub devices like access points and gateways.

DHCP
The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, to deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and to provide other configuration information such as the addresses for printer, time and news servers.

DSSS
Also known as “Direct Sequence Spread Spectrum,” this is a variety of radio transmission methods that continuously change frequencies or signal patterns. Direct Sequence Spread Spectrum (DSSS), which is used in CDMA technology,. multiplied the data bits by a very fast, pseudo-random bet pattern (PN sequence) that “spreads” the data into a large coded stream that takes the full bandwidth of the channel.

DNS
The Domain Name System (DNS) is a distributed Internet directory service.DNS is used mostly to translate between domain names and IP addresses, and to control Internet email delivery. Most Internet services rely on DNS to work, and if DNS fails, web sites cannot be located and email delivery stalls.

Dynamic IP Address
An IP address is automatically assigned to a user’s AP in a TCP/IP network typically by a DHCP server.

EAP
Extensible Authentication Protocol. A protocol that provides an authentication framework for both wireless and wired Ethernet enterprise networks. It is typically used with a RADIUS server to authenticate users on large networks. EAP protocol types are used in the 802.1X-based authentication in WPA-Enterprise and WPA2-Enterprise.

Encryption
A mechanism for providing data confidentiality.

Ethernet
The most popular international standard technology for wired Local Area Networks (LANs). It provides from 10 Mbps transmission speeds on basic 10BastT Ethernet networks to 100 Mbps transmission speeds on Fast Ethernet networks, 1000 Mbps on Gigabit Ethernet, and 10,000 Mbps on 10 Gigabit Ethernet.

Firewall
A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both.Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets.All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

Firmware
Software routines that are embedded as read-only memory (ROM) in a computer chip or hardware device to prevent modification of the routines. Unlike random access memory (RAM), read-only memory stays intact in the absence of electrical power. Startup routines and low-level input/output instructions are stored in firmware.

Gateway
A device, usually a Router, that connects hosts on a local network to other networks.

Infrastructure mode
An old term used to describe a wireless network consisting of devices connected to a network using a centralized wireless access point. One of two types of wireless network modes; the other is a device-to-device network (also known as peer-to-peer or ad hoc mode).

IP Address
Every PC on the Internet has a fixed identifying number, called a IP Address. A typical IP address looks like this: 216.27.61.137

LAN
A system of connecting PCs and other devices within the same physical proximity for sharing resources such as an Internet connections, printers, files and drives. When Wi-Fi is used to connect the devices, the system is known as a wireless LAN or WLAN.

MAC Address
On a local area network (LAN) or other network, the MAC (Media Access Control) address is your computer's fixed hardware number.Usually written as: 01:23:45:67:89:ab

Ping (Packet Internet Groper)
A utility to determine whether a specific IP address is accessible. It works by sending a packet to the specified address and waiting for a reply. PING is used primarily to troubleshoot Internet connections.

RADIUS
Remote Access Dial-Up User Service. A standard technology used by many major corporations to protect access to wireless networks. RADIUS is a user name and password scheme that enables only approved users to access the network; it does not affect or encrypt data. The first time a user wants access to the network, secure files or net locations, he or she must input his or her name and password and submit it over the network to the RADIUS server. The server then verifies that the individual has an account and, if so, ensures that the person uses the correct password before she or he can get on the network. RADIUS can be set up to provide different access levels or classes of access. For example, one level can provide blanket access to the Internet; another can provide access to the Internet as well as to e-mail communications; yet another account class can provide access to the Net, email and the secure business file server. Like other sophisticated security technologies, RADIUS comes in a variety of types and levels.

RJ-45
Standard connectors used in Ethernet networks. They appear similar to standard RJ-11 telephone connectors. However, RJ-45 connectors can have up to eight wires, whereas telephone connectors have only four.

Roaming
The ability to move seamlessly from one area of Wi-Fi or cellular phone coverage to another with no loss in connectivity. Roaming also refers to the ability of road warriors to wirelessly connect to the Internet from different hotspots without confronting the array of schemes used by different providers to authorize use and track billing. Roaming agreements among providers allow mobile professionals to a single authentication and authorization scheme to have all charges resolved to a single bill.

Router
A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP network. Routers are located at gateways, the places where two or more networks connect.

Server
A computer that provides resources or services to other computers and devices on a network. Types of servers can include print servers, Internet servers, mail servers, and DHCP servers. A server can also be combined with a hub or router.

Site survey
A comprehensive facility study performed by network managers to insure that planned service levels will be met when a new wireless LAN, or additional WLAN segments to an existing network, are deployed. Site survey's are usually performed by a radio frequency engineer and used by systems integrators to identify the optimum placements of access points to insure that planned levels of service are met. Site surveys are sometimes conducted following the deployment to insure that the WLAN is achieving the necessary level of coverage. Site surveys can also be used to detect rogue access points.

SSID
The SSID is the name represents the routers and Access Point in wireless network.

Subnet Mask
A mask used to determine which subnet a IP address belongs to. An IP address has two components, the network address and the host address. Subnetting enables the network administrator to further divide the host part of the address into two or more subnets.

Switch
A type of hub that controls device usage to prevent data collisions and insures optimal network performance. A switch acts as a network traffic cop: Rather than transmitting all the packets it receives to all ports, as a hub does, a switch transmits packets to only the receiving port.

TCP/IP
TCP/IP (Transmission Control Protocol/Internet Protocol), the suite of communications protocols used to connect hosts on the Internet.

TKIP
Temporal Key Integrity Protocol. The wireless security encryption mechanism in Wi-Fi Protected Access. TKIP uses a key hierarchy and key management methodology that removes the predictability that intruders relied upon to exploit the WEP key. It increases the size of the key from 40 to 128 bits and replaces WEP's single static key with keys that are dynamically generated and distributed by an authentication server, providing some 500 trillion possible keys that can be used on a given data packet. It also includes a Message Integrity Check (MIC), designed to prevent an attacker from capturing data packets, altering them and resending them. By greatly expanding the size of keys, the number of keys in use, and by creating an integrity checking mechanism, TKIP magnifies the complexity and difficulty involved in decoding data on a Wi-Fi network. TKIP greatly increases the strength and complexity of wireless encryption, making it far more difficult—if not impossible—for a would-be intruder to break into a Wi-Fi network.

USB
A high-speed bidirectional serial connection between a PC used to transfer data between the computer and peripherals such as digital cameras and memory cards. The USB 2.0 specification, announced in 2000, provides a data rate of up to 480 Mbps, 40 times faster than the original specification which provided only 12 Mbps.

WAN
Wide Area Network, a communication network that covers a relatively broad geographic area, consisting of two or more LANs. Broadband communication over the WAN is often through public networks such as the ADSL or Cable systems, or through leased lines or satellites. To simplify it, please image network as a WAN.

WEP
WEP (Wired Equivalent Privacy) is a data privacy mechanism based on a 64/128-bit shared key algorithm, as described in the IEEE 802.11 standard.

Appendix B: Specifications

Physical Interface

The Wireless Access Point includes one Ethernet LAN port, one Initialize button and one antenna.

Item	Contents	Description
1.	Ethernet port	10/100Mbps Ethernet RJ-45 with auto-sensing and auto MDI/MDIX
2.	Q-Link button (Auto Link)	Auto secure channel configuration between two game adapters ● Ad-hoc mode ● AP to station in infrastructure mode
3.	Init button	Device reset (Init to factory default)
4.	Wireless antenna	External, 3dBi
5.	Mode switcher	Hardware switch among AP, Adapter(station infrastructure), station Ad-hoc modes
6.	Power adaptor	7.5V, 800mA

Specifications

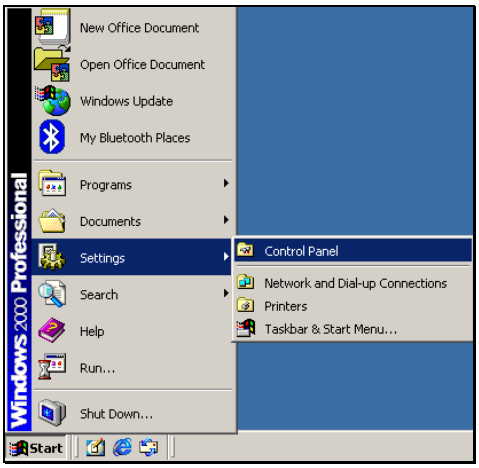
System	
CPU, Flash and SDRAM Size	RDC R2600, 1MB Flash, 8MB SDRAM
Standards	IEEE 802.3 (10BaseT), IEEE 802.3u (100BaseTX), IEEE 802.11b/g (Wireless)
Operating Range	Wireless - Open space: 100 – 300m; Indoor: 30 - 100m
Power Consumption	7.5V, 470mA max.
RF – 802.11g (backwards compatible to 802.11b)	
Frequency Band	2412 ~ 2484 MHz (subject to local regulation)
Modulation Technology	OFDM and DSSS
Modulation Techniques	64QAM, 16QAM, QPSK, BPSK, DBPSK, DQPSK, CCK
Data Rates	54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps, auto fallback
Output power	20dBm Peak Power@ 54Mbps, Nominal Temp Range 20dBm Peak Power@ 11Mbps, Nominal Temp Range
Receive Sensitivity	Better than -68dBm; typical -71dBm @54Mbps, Nominal Temp Range Better than -83dBm; typical -85dBm @11Mbps, Nominal Temp Range
Antenna	External Antenna 3dBi
Regulatory and Environmental Compliance	
EMC certification	FCC part 15 (USA)
	CE (Europe)
Temperature Range	Operating: 0 ~ 40 degree C, Storage: -20 ~ 65 degree C
Humidity	10% ~ 85% Non-condensing
Mechanical	
Packaging	Generic, GIGABYTE, private labeling optional
LED indicator	Power/Status LED (Dual Color, Green/Red) Wireless LED (Green) Ethernet Port LED (Green) Auto Link LED (Dual Color, Green/Red)
Weight	80g (include Antenna)
Dimensions	88.34mm x 63.46mm x 21mm

Appendix C: PC Configuration

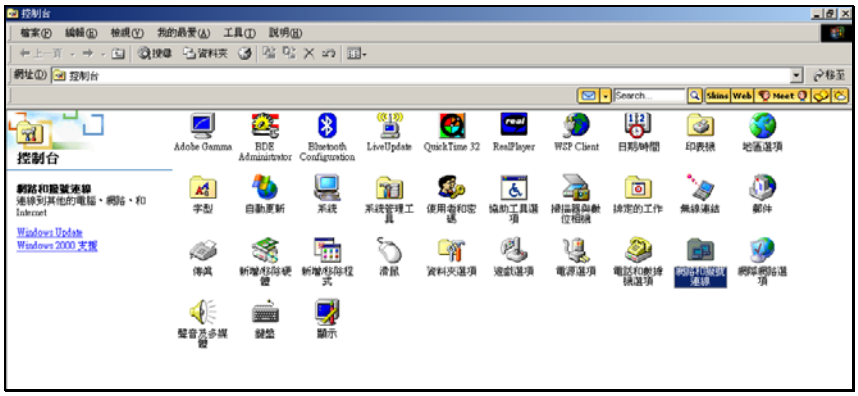
To connect to the AP, your computer needs to be located in the same Subnet as the AP. Please follow the instructions given to setup in a TCP/IP network environment. By default, Windows 98, *Me*, 2000 and XP already have TCP/IP installed. If you have not installed the TCP/IP communication Protocol, please install it now, and then select your operating system for the setup.

TCP/IP Settings Under Windows 2000

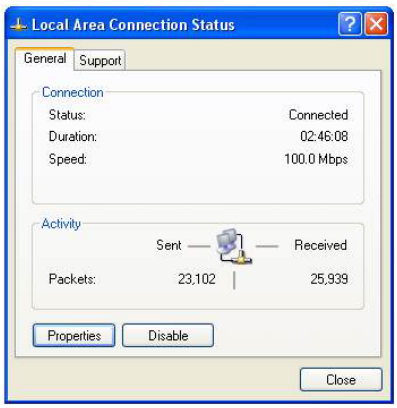
Step 1. Click the **Start** button, select **Settings** and then click the **Control Panel** icon.



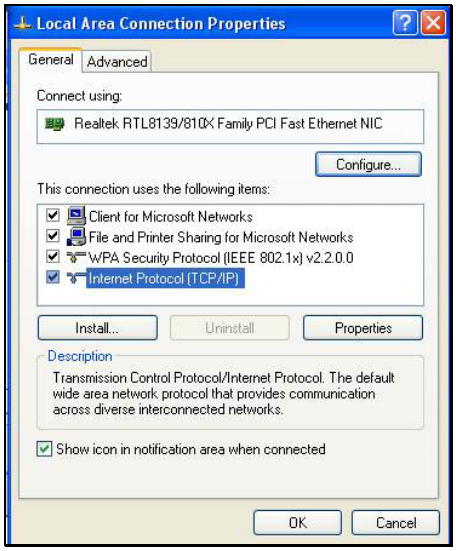
Step 2. Double-click the **Network and Dial-up Connection** icon.



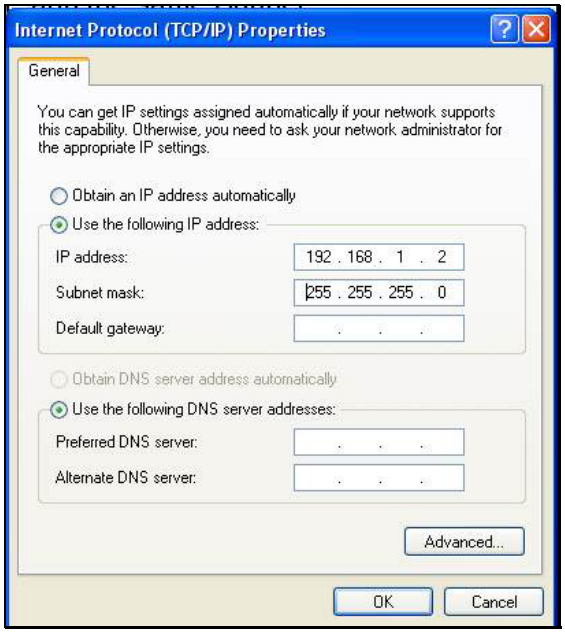
Step 3. Double-click the **"LAN CONNECTION"** and click the **"Properties"** button.



Step 4. The **"Local Area Connection Properties"** dialog box will appear. Verify that the Internet Protocol (TCP/IP) item is checked. Then double-click on **Internet Protocol (TCP/IP)**.

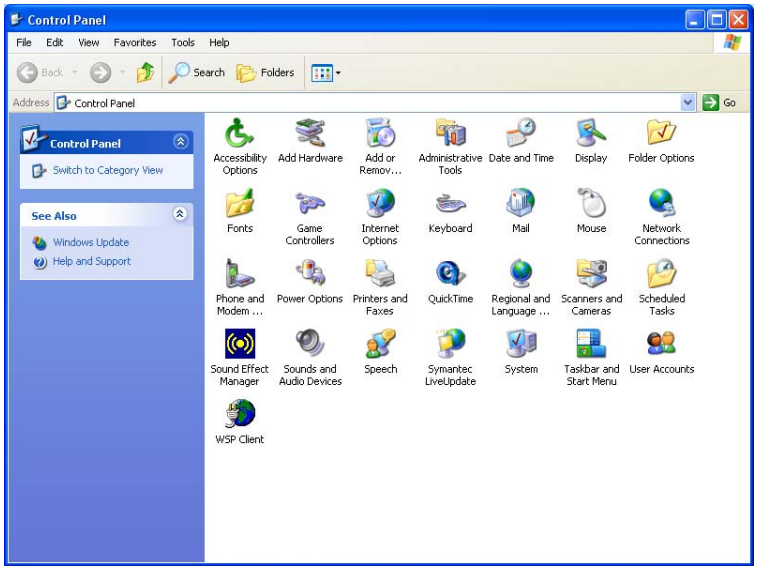


Step 5. Assign the static IP address used by the AP and the same Subnet Mask to the computer (For example, IP address is 192.168.1.2 and Subnet Mask is 255.255.255.0), click the “OK” button to return to Local Area Connection Properties. Click the “OK” button again to complete the PC configuration.

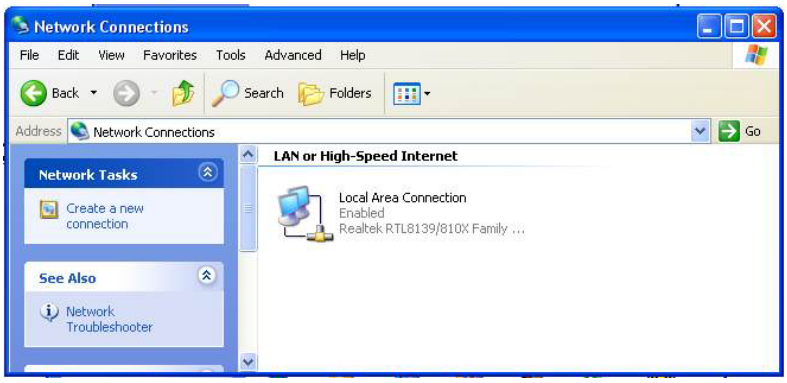

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 2
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

TCP/IP Settings under Windows XP

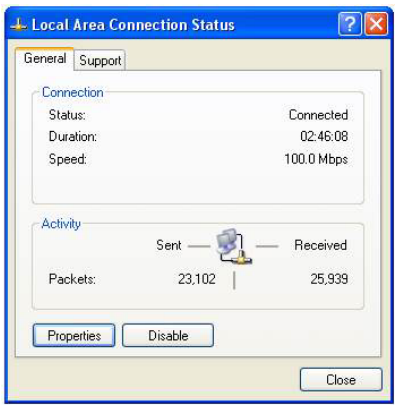
Step 1. Click the **"Start"** in the desktop of the Windows to select **"Settings"**, and then select the **"Control Panel"**.



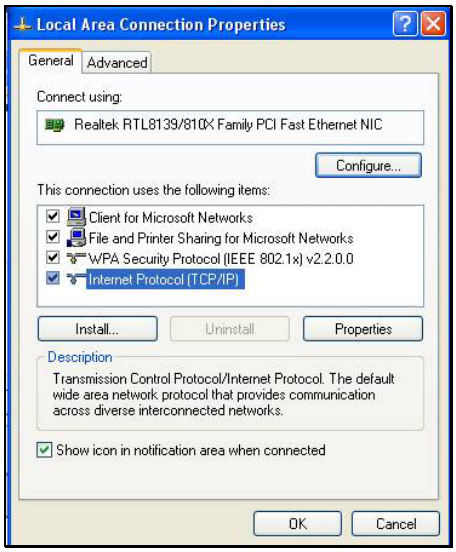
Step 2. Double-click the **"Network Connections"** icon.



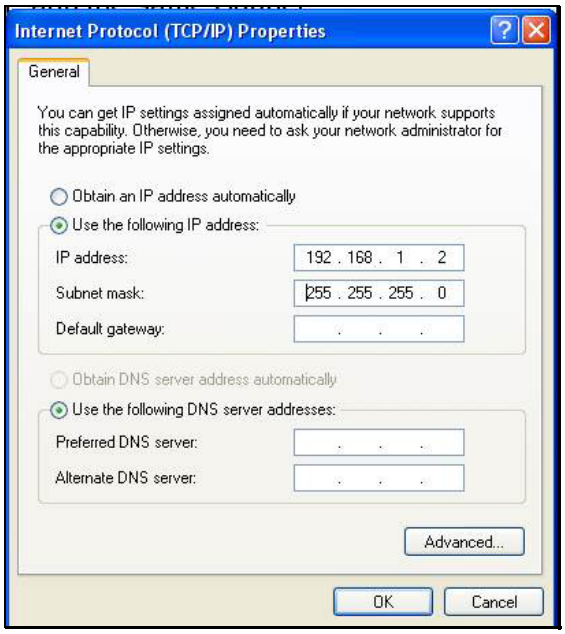
Step 3. Double-click the **"LAN CONNECTION"** and click the **"Properties"** button.



Step 4. The **"Local Area Connection Properties"** dialog box will appear. Verify that the Internet Protocol (TCP/IP) item is checked. And then double-click on **"Internet Protocol (TCP/IP)"** item.



Step 5. Assign the static IP address used by the AP and the same Subnet Mask to the computer (For example, IP address is192.168.1.2 and Subnet Mask is 255.255.255.0), click the “OK” button to return to **“Local Area Connection Properties”**. Click the “OK” button again to complete the PC configuration.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 2
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Limited Warranty Statement

1-Year Warranty

GIGABYTE makes warranty to the original consumer/purchaser that the product is free from defects in materials and workmanship from the time of purchase and for a limited time of one year thereafter. This warranty is null and void if the product is damaged in the process of being installed or improperly used.

GIGABYTE may replace or repair the product with either new or reconditioned parts. Repaired or replaced products will be returned to you at the same revision level as received or higher at GIGABYTE's option. GIGABYTE reserves the right to replace discounted products with an equivalent generation product.

KEEP THIS STUB FOR YOUR PURCHASING RECORD

Customer:	
Phone No:	
Address:	
Email:	
Model:	
Serial:	
Date of Purchase:	
Place of Purchase:	
Reseller:	
Distributor:	

Customer Satisfaction

GIGA-BYTE TECHNOLOGY CO., LTD.

No.6, Bau Chiang Road, Hsin-Tien, Taipei Hsien, Taiwan
Phone No: 886-2-89124888
Fax: 886-2-89124007
http://www.gigabyte.com.tw